APR - 7 1933

VOLUME XXVIII NEW SERIES, NO. 181A

JOURNAL
OF THE
AMERICAN STATISTICAL ASSOCIATION

MARCH, 1933
Supplement

PAPERS AND PROCEEDINGS

OF THE

NINETY-FOURTH ANNUAL MEETING

OF THE

AMERICAN STATISTICAL ASSOCIATION

Edited by

FRANK ALEXANDER ROSS

Held at Cincinnati, Ohio
December 28–31
Nineteen Hundred and Thirty-two

EDITORIAL OFFICE: Columbia University, New York
PUBLICATION OFFICE: Rumford Press, Concord, N. H.

Price $2.00 per copy

NEW SERIES, NO. 181A (VOL. XXVIII) MARCH, 1933
SUPPLEMENT

PROCEEDINGS OF THE AMERICAN STATISTICAL ASSOCIATION

Edited by FRANK ALEXANDER ROSS

CONTENTS

PROGRAM OF ANNUAL MEETING 1
PROBLEMS MET BY COMPANIES THAT INSTRUCT THEIR EMPLOYEES IN STATISTICAL METHODOLOGY. By Theodore H. Brown 10
SOME COMMENTS ON MATERIALS FOR TEACHING STATISTICS. By Theodore O. Yntema 15
THE PROBLEM OF THE REPRESENTATIVE PRICE. By Richard L. Kozelka 20
THE PROBLEM OF THE REPRESENTATIVE BUDGET IN A COST OF LIVING INDEX. By Bruce D. Mudgett 26
THE RELATIVE VOLUME OF TECHNOLOGICAL UNEMPLOYMENT. By Willford I. King 33
DISCUSSION. By F. B. Garver 39
TECHNOLOGICAL DISPLACEMENT OF LABOR AND TECHNOLOGICAL UNEMPLOYMENT. By Boris Stern 42
THE CENSUS OF UNEMPLOYEMNT. By George B. L. Arner 48
THE RELATIONSHIP BETWEEN WAGE RATES AND UNEMPLOYMENT. By Emmett H. Welch 54
COMMERCIAL BANKING DURING THE DEPRESSION. By Walter E. Spahr 59
DISCUSSION. By Fred Rogers Fairchild 66
CALCULATION OF RELIEF EXPENDITURES. By Charles E. Persons 68
THE EFFECT OF THE DEPRESSION ON MULTIPLANT MANUFACTURING ORGANIZATIONS. By Tracy E. Thompson 75
DISCUSSION. By George J. Lawrence 81
RETAILING IN RETROSPECT AND OUTLOOK. By Paul H. Nystrom 84
DISCUSSION. By Lawrence H. Grinstead 89
METHODS AND TECHNICAL PROBLEMS OF THE COMMITTEE ON THE COSTS OF MEDICAL CARE. By Michael M. Davis 92
THE COSTS OF MEDICAL CARE TO THE FAMILY. By Margaret C. Klem 98
THE ABILITY TO PAY FOR MEDICAL CARE. By Louis S. Reed 104
DISCUSSION. By A. C. Bachmeyer 110
PHYSICAL VOLUME OF PRODUCTION OF GOLD, SILVER, AND OTHER COMMODITIES. By G. F. Warren and F. A. Pearson 113
RELATIONSHIP OF GOLD TO PRICES. By G. F. Warren and F. A. Pearson 118
DISCUSSION. By E. W. Kemmerer 126
IS THE AMERICAN FAMILY SOLVENT? By M. R. Neifeld 133
COMMERCIAL FAILURES. By Stephen I. Miller 140
DISCUSSION. By W. H. Steiner 145
THE USE OF CENSUS TRACTS IN ANALYZING THE POPULATION OF A METROPOLITAN COMMUNITY. By Howard W. Green 147
NEW FAMILY STATISTICS FOR 1930. By Leon E. Truesdell 154
THE CENSUS OF DISTRIBUTION. By Robert J. McFall 159
DISCUSSION. By Theodore N. Beckman 165
PUBLIC WORKS AND INFLATION. By R. F. Kahn 168

THE SCIENTIFIC STIMULATION OF EMPLOYMENT. By J. Douglas Brown 174
DISCUSSION. By Willis Wissler 179
AGRICULTURE: ILLUSTRATING LIMITATIONS OF FREE ENTERPRISE AS A REMEDY FOR PRESENT UNEMPLOYMENT. By Mordecai Ezekiel 182
THE PRACTICAL APPLICATION OF CONSTRUCTION CENSUS STATISTICS. By Alanson D. Morehouse 190
THE EFFECTIVENESS OF PUBLIC WORKS IN STABILIZING THE CONSTRUCTION INDUSTRY. By Corrington Gill 196
THE PROBLEM OF ANALYZING LOCAL REAL ESTATE CYCLES. By Roy Wenzlick 201
THE OUTLOOK FOR 1933. By Lionel D. Edie 207
THE OUTLOOK FOR 1933. By Malcolm C. Rorty 209
MINUTES OF THE ANNUAL BUSINESS MEETING 211
REPORTS OF
SECRETARY 215
TREASURER 216
AUDITING COMMITTEE 219
EDITOR OF THE JOURNAL 219
COMMITTEE ON RESEARCH 219
COMMITTEE ON GOVERNMENTAL LABOR STATISTICS 221
COMMITTEE ON INSTITUTIONAL STATISTICS 224
COMMITTEE ON PRICE STATISTICS 227
JOINT COMMITTEE ON STATISTICS OF INCOME 228
COMMITTEE ON REAL ESTATE AND CONSTRUCTION STATISTICS 231
COMMITTEE ON CENSUS ENUMERATION AREAS 231
ADVISORY COMMITTEE ON THE CENSUS 233
COMMITTEE ON POLICY AND FINANCE 233
COMMITTEE ON FELLOWS 234
COMMITTEE ON THE ENCYCLOPAEDIA OF THE SOCIAL SCIENCES 234
REPRESENTATIVES ON THE SOCIAL SCIENCE RESEARCH COUNCIL 234
THE REPRESENTATIVE ON THE BOARD OF THE BUSINESS RESEARCH COUNCIL. 234
REPRESENTATIVES ON ADVISORY COMMITTEE TO THE RESEARCH BUREAU, NEW YORK STATE DEPARTMENT OF SOCIAL WELFARE 235
THE REPRESENTATIVE ON THE NATIONAL CONFERENCE ON NOMENCLATURE OF DISEASE 236
THE REPRESENTATIVE ON THE JOINT COMMITTEE ON THE DEVELOPMENT OF STATISTICAL APPLICATIONS IN ENGINEERING AND MANUFACTURING 236
COMMITTEES FOR 1933 237

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NINETY-FOURTH ANNUAL MEETING

OF THE AMERICAN STATISTICAL ASSOCIATION
HELD AT HOTEL NETHERLAND PLAZA, CINCINNATI, OHIO
WEDNESDAY, DECEMBER 28, THROUGH SATURDAY, DECEMBER 31, 1932

PROGRAM

WEDNESDAY, DECEMBER 28, 1932

10.00 A. M.

Joint Meeting with American Economic Association

Topic:

Round Table Conference on the Record of Insurance in the Depression [1]

Chairman:

Frank G. Dickinson, University of Illinois

Papers:

Investment Experience:
Life Companies
Edison L. Bowers, Ohio State University
Fire and Casualty Companies
Clarence A. Kulp, University of Pennsylvania
Underwriting Experience:
Life Companies
David McCahan, University of Pennsylvania
Fire and Casualty Companies
Gustav F. Michelbacher, Vice-President, Great American Indemnity Company

Discussion:

French E. Wolfe, Procter and Gamble Company
Samuel H. Nerlove, University of Chicago
Corliss Parry, Metropolitan Life Insurance Company

12:45 P. M.

Luncheon Meeting—Committee on Census Enumeration Areas

1:00 P. M.

Joint Luncheon Meeting with American Economic Association

Topic:

Discussion of Round Table Conference on the Record of Insurance in the Depression

[1] See mimeographed proceedings of the American Association of University Teachers of Insurance (non-members, fifty cents, Urbana, Illinois). Detailed digest to be published by the American Economic Association.

THURSDAY, DECEMBER 29

10:00 A. M. *Section I*

Joint Meeting with American Farm Economic Association

Topic:

An Evaluation of the Present Economic Position of Agriculture, by Regions and in General [1]

Chairman:

John D. Black, Harvard University

Papers:

Prices of Farm Products
Joseph S. Davis, Stanford University

Land Prices
Ernst H. Wiecking, U. S. Department of Agriculture

Wealth, Income, and Living
George M. Peterson, University of California

Discussion:

Oscar C. Stine, U. S. Department of Agriculture
Charles L. Stewart, University of Illinois
Ernest C. Young, Purdue University

10:00 A. M. *Section II*

Topic:

Statistics of Public Finance

Chairman:

Carl Shoup, Columbia University

Papers:

Balancing the Budget
Isador Lubin, Brookings Institution [3]

Budget Balancing versus Trade Stabilization: A Criticism of Federal Treasury Policy
Edward G. Nelson and John B. Canning, Stanford University [3]

Discussion:

Alexander Sachs, Lehman Corporation [2]
Fred R. Fairchild, Yale University [4]
Lionel D. Edie, Capital Research Company [2]

10:00 A. M. *Section III*

Topic:

Methodology

Chairman:

Stanley B. Hunt, Tubize Chatillon Corporation

Papers:

Problems Met by Companies that Instruct Their Employees in Statistical Methodology
Theodore H. Brown, Harvard University

Some Comments on Materials for Teaching Statistics
Theodore O. Yntema, University of Chicago

[1] To be printed in the April and July issues of the *Journal of Farm Economics.*
[2] No manuscript submitted.
[3] To be published elsewhere.
[4] Not printed, in the absence of the paper discussed.

The Allocation of Highway Costs among Classes of Motor Vehicles for Purposes of Calculating Graduated Tax Schedules
Arch D. Schultz, Ohio Chamber of Commerce [1]

Discussion:
Donald R. Belcher, American Telephone and Telegraph Company [2]
John H. Cover, University of Chicago [2]

10:00 A. M. *Section IV*

Topic:
Indices of the Cost of Living

Chairman:
Charles E. Baldwin, U. S. Bureau of Labor Statistics

Papers:
An International Inquiry into Costs of Living: A Comparative Study of Workers' Living Costs in Detroit and Fourteen European Cities
Leifur Magnusson, International Labour Office [1]
The Problem of the Representative Price
Richard L. Kozelka, University of Minnesota
The Problem of the Representative Budget
Bruce D. Mudgett, University of Minnesota

Discussion:
William A. Berridge, Metropolitan Life Insurance Company [2]
Hugh S. Hanna, U. S. Bureau of Labor Statistics [3]

1:00 P. M.
Luncheon Meeting of the District Secretaries

Address:
Selling Statistics
John H. Cover, University of Chicago [2]

2:30 P. M. *Section I*

Topic:
Statistical Aspects of Unemployment

Chairman:
William A. Berridge, Metropolitan Life Insurance Company

Papers:
The Relative Volume of Technological Unemployment
Willford I. King, New York University
Technological Displacement of Labor and Technological Unemployment
Boris Stern, U. S. Bureau of Labor Statistics
Census of Unemployment
George B. L. Arner, Bureau of the Census
The Relationship between Wage Rates and Unemployment
Emmett H. Welch, University of Pennsylvania

Discussion:
Fred B. Garver, University of Minnesota
John B. Andrews, American Association for Labor Legislation [2]

[1] Revision to appear in a future issue of the JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION.
[2] No manuscript submitted. [3] Not printed, in the absence of the paper discussed.

2:30 P. M. *Section II*

Joint Meeting with American Economic Association

Topic:

Federal Bank Policy since 1926 [1]

Chairman:

Irving Fisher, President, American Statistical Association

Papers:

Reserve Bank Policy and Economic Planning
Harold L. Reed, Cornell University

Federal Reserve Policy in World Monetary Chaos
James Harvey Rogers, Yale University

Discussion:

Edwin W. Kemmerer, Princeton University
John H. Williams, Harvard University
J. Franklin Ebersole, Harvard University

2:30 P. M. *Section III*

Topic:

National Income

Chairman:

Alvin H. Hansen, University of Minnesota

Papers:

Some Relations between Business Cycles and Distribution of National Income
Morris Copeland, University of Michigan [2]

Commercial Banking during the Depression
Walter E. Spahr, New York University

Statistical Aspect of the Tax Returns of Consolidated Corporations
William L. Crum, Harvard Economic Society [3]

Discussion:

Maurice Leven, Brookings Institution [3]
Fred R. Fairchild, Yale University
Samuel H. Nerlove, University of Chicago [3]

8:00 P. M.

Joint Meeting with American Economic Association, American Sociological Society, and Econometric Society

Chairman:

Raymond Walters, University of Cincinnati

Program:

American Trade Unionism and Social Control
Address by George E. Barnett, President of the American Economic Association [4]

Sociological Research and the Exceptional Man
Address by Luther L. Bernard, President of the American Sociological Society [5]

[1] To be printed in the *Proceedings of the American Economic Association.*
[2] Revision to appear in a future issue of the JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION.
[3] No manuscript submitted.
[4] To be printed in the *American Economic Review*, March, 1933.
[5] To be published by the American Sociological Society.

Statistics in the Service of Economics
Address by Irving Fisher, President of the American Statistical Association and the Econometric Society [1]

FRIDAY, DECEMBER 30

10:00 A. M. *Section I*
Joint Meeting with American Association for Labor Legislation

Topic:
Measuring the Cost of Unemployment

Chairman:
Carter Goodrich, Columbia University

Papers:
Calculation of Relief Expenditures
Charles E. Persons, Bureau of Economic Research, Haverhill, Mass.
The Human Cost of Unemployment
Grace Abbott, The Children's Bureau [2]
Standards of Living in the Depression
Mary van Kleeck, Russell Sage Foundation [3]

Discussion:
Ralph Hurlin, Russell Sage Foundation [4]
Helen Hall, University House, Philadelphia [4]
Ewan Clague, Community Council of Philadelphia [4]

10:00 A. M. *Section II*

Topic:
Statistics of the Depression

Chairman:
George F. Warren, Cornell University

Papers:
The Effect of the Depression on Multiplant Manufacturing Organizations
Tracy E. Thompson, Ohio State University
Retailing in Retrospect and Outlook
Paul H. Nystrom, Columbia University
The Relation between Bank Credit and Business
Andrew T. Court, Court and Pryor [4]
The Effect of the Depression upon Bond Yields
Carl Thomas, Federal Reserve Bank of New York [5]

Discussion:
George J. Lawrence, Detroit Steel Products Company
Lawrence H. Grinstead, Ohio State University
Lucile Bagwell, Federal Reserve Bank of New York [4]
Garfield V. Cox, University of Chicago [6]

[1] Printed in the JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION, March, 1933, Vol. 28, p. 1.
[2] See *United States Daily*, January 16, 1933, and a future issue of the *American Labor Legislation Review*.
[3] Not presented.
[4] No manuscript submitted.
[5] Revision to appear in a future issue of the JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION.
[6] Not printed, in the absence of the paper discussed.

10:00 A. M. *Section III*

Topic:
Costs of Medical and Surgical Care

Chairman:
Isaac M. Rubinow, Independent Order of B'Nai Brith

Papers:
Methods and Technical Problems of the Committee on the Costs of Medical Care
Michael M. Davis, Julius Rosenwald Fund
Costs of Medical Care to the Family
Margaret C. Klem, Committee on the Costs of Medical Care
The Ability to Pay for Medical Care
Louis S. Reed, Committee on the Costs of Medical Care

Discussion:
C. Rufus Rorem, Julius Rosenwald Fund [1]
Albert H. Freiburg, Physician [1]
Arthur C. Bachmeyer, Cincinnati School of Medicine

12:30 P. M.

Luncheon Meeting of the Board of Directors

2:30 P. M. *Section I*

Topic:
Statistical Problems As to Gold

Chairman:
Walter E. Spahr, New York University

Papers:
Physical Volume of Production of Gold, Silver, and Other Commodities
George F. Warren and Frank A. Pearson, Cornell University
Relationship of Gold to Prices
George F. Warren and Frank A. Pearson, Cornell University

Discussion:
Edwin W. Kemmerer, Princeton University

2:30 P. M. *Section II*

Topic:
Statistical Problems As to Debts

Chairman:
Lionel D. Edie, Capital Research Company

Papers:
Is the American Family Solvent?
Morris R. Neifeld, Beneficial Management Corporation
The Bond Owner's Margin of Safety in the 1928–32 Cycle
Laurence H. Sloan, Standard Statistics Company [2]
Commercial Failures
Stephen I. Miller, R. G. Dun and Company

[1] No manuscript submitted.
[2] Published by Standard Statistics Company, 345 Hudson Street, New York City. Complimentary copies on request.

Discussion:
John L. Ritchey, Secretary-Manager, Cincinnati Association of Credit Men [1]
Ralph C. Epstein, University of Buffalo [2]
William H. Steiner, Brooklyn College

2:30 P. M. *Section III*

Topic:
New Statistics of the Census

Chairman:
Frederick L. Hoffman, Prudential Insurance Company

Papers:
Use of Census Tracts in Analyzing the Population of a Metropolitan Community
Howard W. Green, Cleveland Health Council
New Family Statistics for 1930
Leon E. Truesdell, Bureau of the Census
The Census of Distribution
Robert J. McFall, Bureau of the Census

Discussion:
Ernest W. Burgess, University of Chicago [1]
Ewan Clague, Community Council of Philadelphia [1]
Theodore N. Beckman, Ohio State University

8:15 P. M. *Section I*

Topic:
Remedies for Unemployment

Chairman:
Malcolm C. Rorty, Formerly Vice-President, International Telephone and Telegraph Company

Papers:
Public Works and Inflation
R. F. Kahn, Kings College, Cambridge, England
The Scientific Stimulation of Employment
J. Douglas Brown, Princeton University
Agriculture: Illustrating Limitations of Free Enterprise As a Remedy for Present Unemployment
Mordecai Ezekiel, Federal Farm Board
Economic Planning
Paul H. Douglas, University of Chicago [2]

Discussion:
Russell A. Stevenson, University of Minnesota [1]
Willis Wissler, Ohio State University
Benjamin H. Hibbard, University of Wisconsin [1]
Lewis L. Lorwin, Brookings Institution [1]

8:15 P. M. *Section II*
Joint Meeting with Econometric Society

[1] No manuscript submitted.
[2] To be published elsewhere.
[2] Not printed, in the absence of the paper discussed.

Topic:
Interrelations of Demand (Illustrated)

Chairman:
Wassily Leontief, Harvard University

Speaker:
Henry Schultz, University of Chicago [1]

Discussion:
Montgomery D. Anderson, University of Florida [2]
Wirth F. Ferger, University of North Carolina [2]

SATURDAY, DECEMBER 31

10:00 A. M. *Section I*

Topic:
Statistics of Real Estate and Construction

Chairman:
John R. Riggleman, U. S. Bureau of Standards

Papers:
The Practical Application of Construction Census Statistics
Alanson D. Morehouse, Bureau of the Census
Building Cycles in the United States, 1875–1932
John R. Riggleman, U. S. Bureau of Standards [3]
The Effectiveness of Public Works in Stabilizing the Construction Industry
Corrington Gill, Federal Employment Stabilization Board
The Problem of Analyzing Local Real Estate Cycles
Roy W. Wenzlick, Real Estate Analysts, Inc., St. Louis

General Discussion

10:00 A. M. *Section II*
Joint Meeting with the Econometric Society

Topic:
Statistical Forecasting [4]

Chairman:
Irving Fisher, President, American Statistical Association

Papers:
Can Stock Market Forecasters Forecast?
Alfred Cowles, 3rd, Cowles Commission for Economic Research [5]
An Analysis of Stock Market Action
Victor von Szeliski, The Lehman Corporation
Mathematical Forecasting
Warren F. Hickernell, Business Economist
Time Series, Their Analysis by Successive Smoothings
Lewis A. Maverick, University of California [5]

[1] To be printed in a forthcoming issue of the *Journal of Political Economy.*
[2] Not printed, in the absence of the paper discussed.
[3] Revision to appear in a future issue of the JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION.
[4] Summary of this session to be printed in *Econometrica,* April, 1933.
[5] To be printed in full in a forthcoming issue of *Econometrica.*

Discussion:
Harold T. Davis, Indiana University
Ragnar Naess, Goldman-Sachs Corporation
Ray B. Westerfield, Yale University
Harry C. Carver, University of Michigan

1:00 P. M.
Luncheon and Business Meeting of the American Statistical Association

Topic:
The Outlook for 1933

Chairman:
Irving Fisher, President, American Statistical Association

Speakers:
Lionel D. Edie, Capital Research Company
Leonard P. Ayres, Cleveland Trust Company [1]
Malcolm C. Rorty, Formerly Vice-President, International Telephone and Telegraph Company

[1] No manuscript submitted.

PROBLEMS MET BY COMPANIES THAT INSTRUCT THEIR EMPLOYEES IN STATISTICAL METHODOLOGY

By Theodore H. Brown

A full discussion of the topic is not possible without defining what is meant by business statistics. At the present time we do not know definitely the general philosophical approach to such problems. In formulating a part of the approach it is necessary to determine the relationship between accounting and statistics.

The accompanying chart presents diagrammatically a broad outline of the relationship of statistics and accounting to business problems. It will be observed that although there are apparently four divisions, actually the two to the left may be grouped as a single section. The divisions in the chart then become data, methods and results. It is the results toward which the accountant works and toward which the business statistician is working with ever increasing certainty.

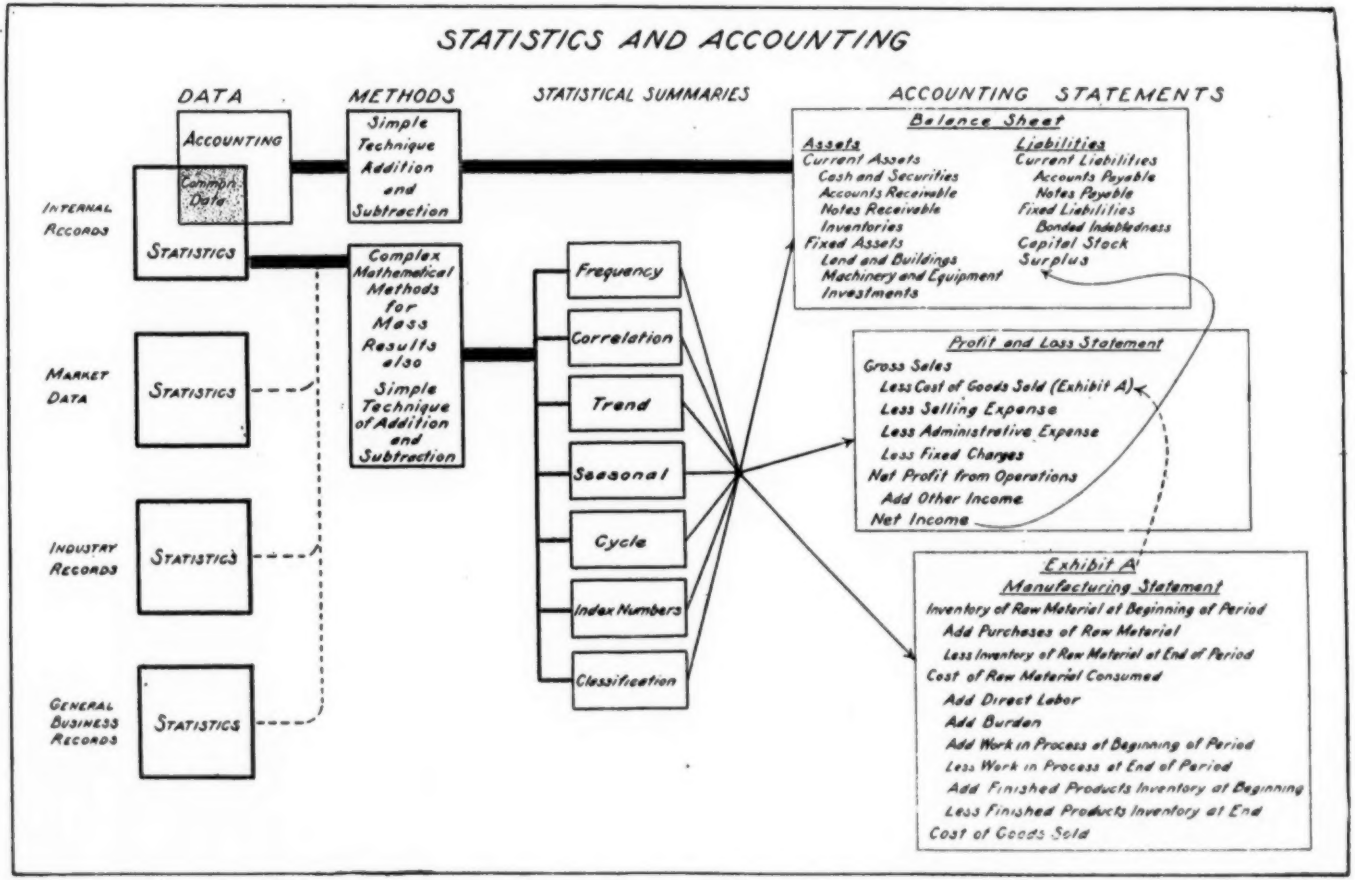
Beginning on the left side of the chart, the data which are compiled within a given company may be divided into two parts: accounting and non-accounting figures. The statistician claims a particular interest in the accounting figures and an interest in all of those other figures which the accountant may not desire to enter on his books.

In addition to these sets of data with which the statistician must deal there are also other important records. These have been termed market data, industry records, and general business records. By market data are meant those figures which are compiled from facts external to any company and which relate to markets. These facts often include figures available to the general public. They reflect the condition of a market in which a given company is trying to distribute its goods or services. Such figures are vital in assisting a company to secure proper control of the distribution of goods.

The second group comprises industry records. These should reflect the condition of a particular industry in which a company operates. Such a picture at times may represent in numerical form a measure of the competition which a particular company must meet.

Finally, we have the third group of general business records. In these times of depression no one needs to inquire what is meant by the records of general business conditions. I shall take the liberty, therefore, of omitting further discussion of this well-known but uncomfortable subject.

It is to be noted that the groups of external figures are tied in with


STATISTICS AND ACCOUNTING
DATA
METHODS
STATISTICAL SUMMARIES
ACCOUNTING STATEMENTS
ACCOUNTING
Common Data
INTERNAL RECORDS
STATISTICS
MARKET DATA
STATISTICS
INDUSTRY RECORDS
STATISTICS
GENERAL BUSINESS RECORDS
STATISTICS
Simple Technique Addition and Subtraction
Complex Mathematical Methods for Mass Results also Simple Technique of Addition and Subtraction
Frequency
Correlation
Trend
Seasonal
Cycle
Index Numbers
Classification
Balance Sheet
Assets
Current Assets
Cash and Securities
Accounts Receivable
Notes Receivable
Inventories
Fixed Assets
Land and Buildings
Machinery and Equipment
Investments
Liabilities
Current Liabilities
Accounts Payable
Notes Payable
Fixed Liabilities
Bonded Indebtedness
Capital Stock
Surplus
Profit and Loss Statement
Gross Sales
Less Cost of Goods Sold (Exhibit A)
Less Selling Expense
Less Administrative Expense
Less Fixed Charges
Net Profit from Operations
Add Other Income
Net Income
Exhibit A
Manufacturing Statement
Inventory of Raw Material at Beginning of Period
Add Purchases of Raw Material
Less Inventory of Raw Material at End of Period
Cost of Raw Material Consumed
Add Direct Labor
Add Burden
Add Work in Process at Beginning of Period
Less Work in Process at End of Period
Add Finished Products Inventory at Beginning
Less Finished Products Inventory at End
Cost of Goods Sold

the internal records of the company by means of dotted lines. This is intended to indicate that such records represent supporting or subordinate facts which are necessary and often vitally important in making certain decisions. They are not, however, equal in importance in the long run to the internal management records of a particular company. We may think of these external records as giving a kind of style and setting to the picture so that they are to be considered as such rather than as the picture itself. They are the tail of the dog, and not the dog.

The next vertical section of the chart gives us a hint as to the methods which are to be employed in analyzing these data so that the results obtained will be useful. By this is meant that the treatment must be of such a form that all of the incidental detail work involved in preparing the final figures shall be completed elsewhere than at the executive's desk. The chart indicates that the method used in connection with accounting is that of simple addition and subtraction. In making such a statement it is assumed that the problem of cost accounting is not included. This really presents a problem of statistical analysis in connection with certain sets of data.

In the case of statistical data, the methods often are complex. Not only is there present the simple approach of classification representing the simple arithmetic process of addition and subtraction, but also there are present processes in which there are single summary figures, each reflecting the condition of a mass of items.

The right-hand third of the chart presents the important results which are to be obtained from the application of procedures to data. As far as accounts are concerned, the crowning glory of the accounting system is the balance sheet. Immediately following the balance sheet, there naturally follows the profit and loss statement, for which Exhibit A represents the manufacturing statement. These three will carry our investigations sufficiently far to give us a line on what we are seeking.

When we turn to the statistical results we find a relatively new term. This is the term "Statistical Summary." It is analogous to accounting statements. A statistical summary has been defined elsewhere as "a statistical statement made for a given purpose and one which is complete for that purpose." The word "complete" is used in a double sense not only of "simplest possible form" but also of "inclusive."

The significance of this definition may be made apparent by an illustration. No accountant in his right mind would give to his chief a column of figures, each opposite a descriptive title, stating that it represented a balance sheet. When the chief inquired as to how much the assets and how much the liabilities actually were, the accountant

would reply, "Add them up and divide by two. If you want to know what the assets are, sort them out for yourself. The liabilities can be handled similarly." Such absurdities do not occur. Yet how often similar things are tolerated from statisticians whose principals hope that through some kind of hocus-pocus or magic of statistics they will be able to obtain mysterious results which will lead them through a golden gate into a land of perpetual prosperity.

With this in mind we will return now to the questions of statistical summaries. Here are listed a variety of items, any one of which may be of significance or value in a given particular problem. The summaries are familiar to all of you. These are drawn together by lines into a central knot, meaning that one or another summary, or a combination of technical summaries, may comprise a business summary for a given purpose. The lines from this central dot lead out to one or another of the important accounting statements. These lines indicate that the statistical summaries are organized in such a fashion that they should impinge upon one or another part of the accounting statements so that in future statements the figures presented will be of a more favorable size indicating a larger net profit for the company. Thus, when these statistical summaries impinge upon the item of gross sales they should produce through the control of distribution a larger volume of gross sales. Along with this, the items of expense, such as the cost of selling, should be reduced. Control of other items follows similarly.

With this background in mind we may now return to our subject. The amount of statistical methodology required by a given business depends upon the size of that business and the character of its work. In cases where only elementary methods are necessary it will be found that men who have had elementary collegiate courses in statistical methods will be sufficiently equipped. In some cases, however, such as in advertising where the theory of probability is important, it may be necessary to provide additional training for one or more members of the organization rather than to seek some highly trained specialist. Another phase of technical training appears in the development of an ability to use a variety of methods in the approach to a given problem. The development of this ability is difficult under the most favorable conditions. If the business worker, however, is required to perform continually detailed routine work, such ability is unlikely to develop.

We may now pass to a consideration of the individuals who are to be included in the educational program. Illustrative groups are (1) engineers or clerks with engineering tastes and interests who may be employed in the manufacturing plant on plant problems, (2) statistical assistants in statistical departments of a given business, (3) high-grade

secretaries or secretarial assistants who are immediate juniors to important officers, and (4) salesmen in companies whose products include statistical machines or devices which are to be sold for use in connection with statistical work.

From the educational point of view the needs of each of the groups enumerated are different. In the plant the statistical demands are for index numbers to measure output, classifications for checking wastes, or frequency distributions for setting time standards. In the statistical department of a business, presumably all varieties of statistical work will be performed. In the case of the secretaries, the problem turns more about the question of organizing statistical summaries in proper form, so that their principals will be saved as much time and labor as is possible. The best approach for salesmen is that of a broad understanding of statistical problems.

In organizing an educational program, much further experimentation is necessary. In a topic such as this, which represents a new field of education, only certain portions may be sketched hastily. At some future time possibly the Association may desire to discuss in a series of papers the detailed problems involved.

SOME COMMENTS ON MATERIALS FOR TEACHING STATISTICS

WITH SPECIAL REFERENCE TO THE USE OF SYMBOLS

By Theodore O. Yntema

The problems encountered in teaching statistics afford ample opportunity for the profitable exchange of opinion. The ends toward which student training should be oriented, the subject matter best suited to these ends, the selection of teaching materials, the formulation of instruction methods, the establishment of entrance qualifications especially in mathematics and English, the classification of students, and the integration of statistics with other courses in the curriculum—all these are questions on which most of us would welcome additional light. This paper is concerned directly only with teaching materials and, for the most part, with a rather specialized phase of that subject, the use of symbols. First, however, a brief survey will be made of some general aspects of laboratory, library, and text facilities.

Physics, chemistry and biology are sometimes known as the laboratory sciences. Teaching in these fields consists not only in explaining "how it is done" but in requiring students to "do." In statistics much of the laboratory work involves time consuming detail, especially arithmetical detail, which imposes severe limitations on the extent to which such assignments can be made. But the stringency of these limitations can be considerably relaxed by the use of computing machines, and the students can thereby be given a much more realistic and varied problem experience with the same expenditure of effort on their part. It is not a valid objection to calculating machines to observe that, when they are used, laboratory assignments sometimes degenerate into machine arithmetic or merely rise to the level of illustrating routine procedures without helping the students to learn "when to do what." In competent hands good laboratory facilities are an important aid to elementary instruction, and for some aspects of advanced study and research they are indispensable. There is need to foster the consciousness of these facts among those in control of academic budgets.

The library problem is peculiar because books on statistics are not grouped together but are classified primarily by the major fields of knowledge with which they deal. For the introductory course this is not a serious handicap; the references, ordinarily limited to a maximum of twenty or thirty, can easily be brought together on one reserve shelf. For the advanced student or research worker the situation is entirely

different. The books which he needs are found in the fields of mathematics, physics, biology, psychology, education, sociology, economics and business. Even with a centralized library they are widely scattered in the stacks and with departmental libraries they are accessible only at great inconvenience. A solution which has proved highly satisfactory with us is the establishment of a small statistics library containing duplicates of the more important books and periodicals in these various fields. The initial cost of such a working collection may be kept to $1,000 and need not exceed $3,000.

We have also found it desirable to include in this library the more important census volumes, yearbooks, periodicals, and other sources of data, which should be conveniently available for student reference. This feature is especially valuable since the library is located immediately adjacent to the laboratory.

A textbook should consolidate, organize, and present the basic knowledge in a field in such a way as to enable the student to acquire that knowledge without waste effort. Concerning the writing of texts two matters are fairly evident. First, the qualifications for the job include competence in theory, wide experience in practical applications and proficiency in exposition. The product of hack compilation is not trustworthy. Second, a severe standard of criticism is necessary as a defense against the propagation of errors. The authors of books which are patently unfit for use may be censured for wasting our time but they do not constitute a menace. When, however, books which are otherwise good or even not obviously inferior fall into gross errors, it is urgent that such errors be exposed and roundly criticized by reviewers. That the need for such defense is not imaginary is attested by the treatment of sampling in numerous elementary texts. About half of these texts (among them some of the best) explain the standard error of the arithmetic mean as if it were the standard error of the difference between the means of two samples! As another instance may be cited Riggleman and Frisbee's *Business Statistics,* published this year and already widely adopted. Although it went through five mimeographed editions, was used by a thousand students, and was read and criticized by several persons, some eminent in our profession, this book is guilty of the error just noted, contains inaccurate statements of the principles of large numbers and of small numbers, and at points discloses a lamentable misunderstanding of correlation technique.

If the quality of theory in elementary texts has not exhibited much improvement over the past ten years, there has been a noticeable advance along another line. In teaching a subject like ours whose concepts are to so large an extent new to the student, it is essential to relate

these concepts to his previous experience and to the situations in which he will apply them. Most students do not have a sufficiently rich background or an adequate imagination to appreciate the possibilities and the limitations of the use of methods which are learned only as abstract mathematics. Personally, I regard this as a conclusive argument against the consolidation in the mathematics department of instruction for average students in beginning or intermediate statistics. On the other hand, the richness of illustrative material which is being made available in case books and in texts like Riggleman and Frisbee's is a real boon to our pedagogical efforts.

Still another sign of progress is the increasing number of specialized monographs and texts, many of them valuable for advanced instruction.

After surveying these general aspects of teaching materials we turn to a more specific problem. Symbols are practically indispensable for the statement of any but the most rudimentary statistical theory. Unfortunately they are also the bugbear of the beginner and frequently no end of annoyance in advanced study. Their use constitutes therefore a proper matter for our consideration.

Students often lay their lack of success in statistics to deficient mathematical preparation. Naturally those who have forgotten their high school algebra, geometry and trigonometry, as well as part of their grade school arithmetic, come to grief in logarithms, two-dimensional graphics, and simultaneous equations. But students not infrequently ascribe to ignorance of mathematical processes difficulties which are really traceable to a failure to associate symbols with the concepts which they represent. Such failure may be due to native incapacity, to the absence of previous experience with symbols, or to defective text material and instruction.

In view of these facts it would seem wise: first, to set up, if possible, definite prerequisites in mathematics; second, to avoid the use of symbols in a general course except where there is a clear advantage from employing them; third, to define all symbols adequately and to keep these definitions conveniently before the student; fourth, to select the best possible set of symbols; fifth, to standardize the symbols for the principal concepts and to observe uniformity in any one piece of exposition.

The discussion of appropriate mathematics prerequisites will not be undertaken here since it would lead us too far afield. With reference to the second point, it may be observed in passing that the extent to which symbols can be profitably employed will vary with the ability of the students, previous work in mathematics, future training in statistics, the character of the text and idiosyncrasies of the instructor.

The definition of symbols, however, should not be dismissed too lightly. In the first place, the definitions should be explicit, accurate and complete. Lest I be accused of belaboring the obvious, I cite the fact that a prominent economist actually maintained that students understood his income and cost diagrams better if they were not bothered with precise definitions of the x and y variables! In the second place, clarity and vividness of definition will help to link the concept and the symbol in the student's mind. Frequently an illustration may be of value. Third, the definitions should be repeated when necessary and should be collected in a glossary for convenient reference.

The choice of symbols is not by any means a matter of indifference when the concepts involved are numerous and even moderately complicated. If simplicity, convenience for the writer, and ease of understanding on the part of the reader are appropriate criteria for a system of notation, the following suggestions would seem to be in order:

1. Established usage in mathematics should be followed where possible.

2. Symbols already widely used in statistics should be adopted unless there is excellent reason to the contrary.

3. Mnemonic symbols are preferable to those which do not suggest the ideas for which they stand.

4. Symbols which are familiar to the reader are better than those which are strange to him.

5. Symbols should be limited to such as can be conveniently written and printed. This and the preceding section suggest that, other things equal, our ordinary letters and numbers are the most satisfactory. Specially devised characters are to be avoided.

6. The principle of economy should be observed. This is necessary because the number of letters and figures is limited and because the fewer of these employed the more easily they are learned. Economy not only requires that each concept be allotted one symbol but that a single general symbol be used for all the variates, all the variables or all the functions of a particular class with subscripts or other marks to distinguish the individual members of the class.

7. Parallelism of notation. Where a group of variates, variables or functions are modified by shifting of the origin, by conversion of magnitudes into standard units, by correction for errors of grouping, by adjustment for loss of degrees of freedom, or by some other change, the two sets of symbols employed for the original and modified forms should be strictly parallel. This principle should also be observed in designating corresponding characteristics of different fields, such as those of the universe and those of the sample. Parallelism can be obtained by

capitalizing, italicizing, printing in bold face, or marking one of the two sets of symbols or by using both English and Greek alphabets.

These principles are not independent or generally consistent. Current usage, mnemonic qualities, familiarity, economy and parallelism are frequently in conflict. The selection of satisfactory symbols is therefore dependent on good judgment in weighing these various factors.

All this leads naturally to the question of standardizing our notation. Against such standardization some may urge the following arguments.

1. Statistics is still in such a state of flux and growth that it is unwise to make an inflexible cast for our means of expression, a cast which may prove inadequate and may perhaps hamper future development.

2. Systems of notation can be devised for particular topics which are superior in themselves to those which must be adapted to the requirements of the whole field.

3. If we leave the situation alone a standardized notation will tend to evolve.

The case for standardization is too obvious to require much elaboration. It lies in the economy of time in mastering a single system of statistical shorthand instead of a different system for each topic and each author. The present Babel of notation limits the possible range of readings from which students can profit and causes serious loss of time when different authors are consulted.

Although opinions differ on the issue, I believe that standardization of symbols for our well established, common concepts is clearly indicated. It can be accomplished in such a way as to permit extension to other concepts as they crystallize, and it need not interfere with any symbolic use which may be convenient in special discussions or in new analyses. Changes in standard notation, should they be necessary, are entirely feasible. In frequency distributions, index numbers, time series, sampling, correlating and curve fitting there are many concepts and methods which are generally recognized. For them a fairly satisfactory terminology has developed. Why should confusion of symbols be tolerated?

In 1926 a sub-committee on mathematical symbols reported to this Association that in its opinion the time "was not yet ripe to standardize the notation in mathematical statistics." I should like to submit that the time is now over ripe for establishing uniformity of symbolism in the representation of our elemental concepts.

THE PROBLEM OF THE REPRESENTATIVE PRICE

By Richard L. Kozelka

The discussion of index number construction has largely emphasized the question of weights, implying that the question on unit prices is relatively simple. Perhaps it is, yet the difficulties in collecting comparable prices are by no means negligible. In the field of retail prices, to which this paper is limited, the uncertainties of the price collector are a reflection of the more serious problems of the consumer who is guided in his choices by price. The cost of living index is assumed to measure changes in the cost of maintaining a certain standard, as measured by an aggregate of physical goods and specified personal services. At best, this is a crude measure. We recognize the necessity for periodic changes in the commodity list as consumption habits reflect changes in style and technology. We are in sympathy with the eagerness of the U. S. Bureau of Labor Statistics to conduct another survey to bring the 1918 study up to date. The purpose here is to discuss the collection of prices where no marked style or technical changes are assumed.

In a study of changes in cost of living in the Twin Cities in the last three years, conducted during the past summer, price collection was a major task. The selection of the commodities to be priced was only a beginning. The sources of data and the question of regular versus sales price had to be determined. The solution adopted for these questions, and the credibility of the data collected are discussed below.

The Twin Cities are noted for the emphasis on downtown shopping. The medical profession recognizes this factor, and the ratio of downtown dentists and doctors is higher than in similar cities. The purchase of practically all items of home consumption except groceries is predominantly in the downtown stores. If the method of personal visitation is used, the collection of data is facilitated because the area of collection is small. Furthermore, in a period of price change, particularly price decline, the neighborhood store depends on the convenience of service to compensate for a tardy price adjustment. The emphasis on turnover in downtown stores raises the price question more frequently than in the slower-moving neighborhood stores.

Special sales are always with us. The advice of the National Economic Bureau to those using its suggested budgets as a guide is "Watch the sales." Nevertheless, in the opinion of our informants, sale prices are not satisfactory data for a cost of living index. First, very few items are chronic sale items, and it is easy to get representative prices

for these. Second, sale items are admittedly bait to draw customers to wider purchases. A study of department store sales, according to one store executive, indicated that 83 per cent of the purchases were at regular prices. The store advertising is planned to meet this situation. Since sales are usually for limited periods, the number who can take advantage of them is usually limited. Third, distress merchandise, which was a frequent phenomenon this year, and seasonal closeouts, are not representative of what the people buy, in terms of choice and selection. Fourth, it is an open secret in the trade that special merchandise is bought for many sales, merchandise which would not fit in well with the regular stock on the floor or on the shelves, but which is considered suitable for a "promotion" as the trade calls it. This merchandise is not necessarily inferior, but because of its special character comparisons over time are difficult. Fifth, grant for the sake of the argument that sale prices are typical of consumer purchases, if the relative change in price over time is the same as for the regular price, the choice is in favor of the quotation which is easier to get.

A variation of the sale idea which is a veiled price concession capable of quick and painless withdrawal, is the free goods offer. This may take the form of a "free dozen with a case order" to the retailer, as in the case of certain toiletries. The intention is to maintain sales volume by stimulating dealer effort rather than by disturbing an established retail price. Such a price decline may or may not reach the consumer. A direct appeal to the consumer is the extra package or the free gift with a regular package which has been a frequent sales stratagem in groceries in the past year. For the statistician these gifts complicate the problem of measuring actual price changes in the budget item.

Akin to the problem of regular versus sale prices in the retail field is the relation of standard rate versus actual collections for professional and rental services. Theoretically the standard budget may ignore this, on the assumption that our standard family pays its bills. However, if professional ethics require willingness to serve in spite of a decline in the number of paying clients, those who do pay are carrying a relatively increasing burden of the support of the professional classes and their book accounts. The rental agency, whose concern is total rental income, depends on the strategy of a rigidly maintained rental schedule, at least for apartments, until a general revision is made. Rental managers have learned to their sorrow that secret concessions, free months, etc., are not secret for long. When a renter falls in arrears, the attitude of many managers is that nothing is gained by special reductions in rent. The non-paying renter and client is certainly getting a bargain which retards an adjustment of rates for all classes.

Index number theory postulates an identity of commodity or a recognizable and measurable difference which can be expressed in the price quotation. Otherwise an index of price may unconsciously include an unknown difference in the commodity measured. This is one of the most serious problems in price comparisons, particularly retail prices, today.

Commodities sold in trade-marked, standardized packages for the most part offer little difficulty in comparisons over time. In a period of declining prices such as the present, if any change is made, usually the package is enlarged. The established price is maintained and the public is abundantly appraised of its gift from the manufacturer. If trade-marked, fixed-price, packaged goods represent the bulk of consumer purchases in certain budget groups, the collector of price data can be thankful for the lighter burden. However, if the index of prices is considered as a possible tool in price stabilization, there is danger of unsound practices if the stabilization is accomplished through the legal monopoly of trade marks. This is not the equilibrium price desired by the economist as the summum bonum.

Style changes have long been recognized as an obstacle to exact comparability of items between periods. The problem has usually been met by the process of splicing indices of the two style periods. This may be satisfactory, since, in the opinion of one ladies' fashion expert, the actual style changes from year to year in most articles of clothing are usually only minor details. The real problem is in recognizing other changes to be discussed later. Some style changes are relatively violent and splicing is difficult. Millinery is a case in point with marked changes in material and detail between seasons. The garments of high school students reflect the volatile demands of this age group.

Retail pricing policies, particularly in women's clothing, interfere with exact price comparisons. Wholesale prices, particularly in raw materials, move up and down by fractional changes and objective standards are set up to recognize changes in the commodity. But the retail store sets up three or four price lines in its appeal to a varied clientele and buys merchandise to fit into these price lines. As costs of production declined the manufacturers and buyers had the option of improving the quality of a dress sufficiently to maintain it in its old price line, or economizing here and there and putting the dress in the next lower price line. Apparently the decline in net cost of production has not been enough between seasons to cover the spread between price lines. Under the pressure of business conditions there has been little doubt about the option taken by the retailer. There is a strong suspicion that such estimates as were obtained tended to overstate the real change in prices, the difference being taken out of quality.

In contrast with the downward bias in the price line there are some clothing accessories that have maintained a fixed price and built up the quality. Men's belts and braces are examples. A certain type of woman's garment was reported in a number of stores as unchanged in price but greatly improved in quality. A value estimate of this improvement was avoided by the informants as too difficult to make.

Apparently the improvement of quality while maintaining price has been contrary to the spirit of the times. In addition to the customers' ordinary skepticism of such statements by the retailer, the decline in individual incomes together with the drop in agricultural prices so vital to the Northwest, have led to a popular, if illogical, conclusion that all retail prices should drop accordingly. The people got what they asked for. In trade parlance, the stores traded down, i.e., they carried lower price lines and grades of merchandise than had ever been handled before in many cases. Last spring a confidential survey made by a national association of retail clothiers found the modal suit sale from $10 to $40 below the preceding year. The customer was offered a garment or a piece of furniture or home-furnishings at almost any price he was willing to pay. To be sure, in most cases some reservations as to quality were made for the cheapest lines. The pressure on the retailer to meet the customers' pre-conceived price decline has been passed back to the manufacturer and the results have not simplified price comparisons.

In the collection of retail prices one should expect that the specialized buyer in a department or specialty store is best qualified to report the net change in retail prices. He should be able to make correct adjustments for changes in materials and workmanship which would prevent direct comparability of commodities. The buyers interviewed last summer were constantly requested to be sure that they were quoting prices on identical items. With full assurance they quoted prices which showed a surprising drop in many cases. Tests in the shoe and furniture trades, in men's clothing and in knitwear seem to prove that drops in retail prices cannot have been met entirely out of lowered production costs. There must have been depreciation in quality.

The discrepancies indicated above may be due to a smaller percentage mark-up by the retailer but no evidence was found to this effect. This is not to deny that the retailers have lost heavily in the past two years through reduced volume of business and inventory write-offs. Perhaps even the old standard mark-up is insufficient to cover overhead when volume shrinks too far. One reason for the discrepancy, with all due respect to the sincerity of these buyers in quoting prices, is that few of them are in a position to know when an article has been changed or

how much it has been changed. They must frequently rely on the oversanguine statements of wholesale salesmen, or on brief reports from the eastern office of their particular buying chain. For a localized cost of living index this presents a problem at the beginning of operations, the selection of a representative price of identical commodities.

Housing also has its problem of a representative price. Depreciation and obsolescence are inevitable and gradually appear in rental calculations. But the last two years have seen efforts by many property owners to stave off rent reductions by giving tenants extra redecoration service and adding extra conveniences such as mechanical refrigeration and oil heat. Shall these additions be considered an offset to obsolescence, accepting the rents of 1932 and 1929 or 1930 at face value? Or shall the present living quarters be considered essentially improved, and the 1932 rental compared with some estimated value for 1929?

An all too common real estate phenomenon these days is the foreclosed property. According to law, the mortgagor has one year of grace after the mortgagee has served official notice that he will take possession of the defaulted property. Theoretically, the mortgagor uses the year to find other sources of funds to restore his obligation to good standing. Actually, he finds the situation hopeless when the property is over-financed, so he uses the year to "milk the property," in the realtor's language. He offers a minimum of service and accepts almost any type of tenant and any rental to fill the building and maximize the return for the year. If he hesitates to do this, he can readily sell his vanishing equity for a fixed sum and someone else does the milking. This lowers the powers of resistance of the realtor trying to meet all his costs. For the statistician it introduces wide rental variations and a problem in housing accommodations comparable over even a three-year period.

What is the relation between a standard of living and the problem of identical commodities? We would like to measure a given standard in the sum total of human satisfactions as described by J. M. Keynes. Then substitutions could be made at will in the list of commodities. Lacking a satisfactory objective measure for these satisfactions, we maintain a substantially constant list of commodities which represents our standard and price it at intervals. When substitutions are made, similar quality is maintained. The past year has seen many shifts in demand to lower priced articles, usually through necessity, but in many cases apparently without loss of satisfaction. For example, there has been a tremendous shift from the standard fifteen cent cigarette to the ten cent package and from the old regular gasoline to a lower quality. Some users have not been satisfied but many claim to find no difference

in satisfaction. Either these people are rationalizing the readjustment of slimmer purses to fixed habits or they are genuinely satisfied. The bulk of the lower income groups no longer buy such substantial furniture as they did years ago. The use of the installment plan and the trade-in privilege encourages the purchase of furniture for appearances and its exchange when the appearances are gone. Is there any detrimental effect on the standard of living if furniture is skimped in materials and workmanship today as compared with the standards of several years ago?

The real danger in a period of serious price decline is that people are lulled by the market price changes into assuming that they are getting the same commodity and the statistician thinks that he is measuring the total change in a given standard of living. Actually, the public clamor for lower prices is satisfied by the merchant by trading down and by small economies taken out of the commodity. This bias is unfortunate because periods of severe price change always bring price indices into prominence.

Shall the statistician assume that some law of compensation will offset this downward bias in the cost of living index in a period of sharply falling prices? Will there be a compensating bias upward when the price curve and the business curve turn upward? It seems unlikely. One might hazard the opinion that the bias would continue if retailers hesitate to offend customers by higher prices but present the old staples in slightly modified form as a new line at higher prices. Regardless of any doubtful compensating effect over an extended period, the object is a correct index for each interval in the period.

Why should the statistician concern himself over the bias in prices if the consumer thinks that he is obtaining the same commodity? For the ultimate purpose of the index perhaps he should not, but until some objective tool is invented to measure total human satisfactions, the statistician must seek objective standards to hold his commodities fixed while he seeks the representative price.

THE PROBLEM OF THE REPRESENTATIVE BUDGET IN A COST OF LIVING INDEX

By Bruce D. Mudgett

Since cost of living indexes are designed to measure the varying costs of a standard of consumption, they must, if they are going to be associated with real people and real consumption standards, be based upon the satisfactions that these same real people enjoy. In a fundamental or ultimate sense this standard is subjective enjoyment, which cannot be measured directly. Instead we measure the costs of an objective list of the material goods and services that people buy for the purpose of satisfying their subjective desires.

Before constructing a cost of living index therefore it is necessary to study the expenditure habits of the group to which it refers in order to find out what income they have and what they spend it on—what goods and services and in what amounts. It is the relationship between this original study of the cost of living (i.e. a study of actual expenditure habits) and the physical budget upon which the cost of living index is based that interests me now. There are two questions to be considered: First, since the ultimate standard which we are considering is subjective, there is the question how long the actual lists of goods and services recorded in the original study will remain the actual means of satisfying subjective desires or how soon the same ultimate ends will be reached through different proximate channels. Second is the question whether the actual expenditure budget of the group is adequately represented by the budget used in the index; or, in other words, whether a representative sample has been taken.

The first question need not detain us long, since all authorities will probably be in substantial agreement upon it. The basic study upon which existing cost of living indexes in the United States depend is the United States Cost of Living Investigation of 1918 covering 12,096 workingmen's families in all parts of the country. Several other investigations on a smaller scale have been made since then and they have doubtless influenced existing indexes; but if I read current thought rightly everyone agrees that the time is ripe for a new cost of living investigation on a nation-wide scale.

The second question presents the following practical issue. Since time and money for the construction of cost of living indexes are not unlimited and since therefore it is impossible to collect price quotations for literally all of the items entering into a given standard of living, do

our existing indexes afford as accurate a sample of actual family budgets as we may hope for in view of time and money limitations? Let me say at the outset that I have no categorical answer to this question and that after some study of available information I am more than ever convinced that existing indexes are a fairly accurate measure of the phenomenon they are supposed to measure. Nevertheless a few suggestions for improvement may be tentatively offered.

To test the adequacy of the sampling in existing indexes, I propose to compare their budget items or weights mainly with the commodities shown by the 1918 investigation to have been purchased by workingmen's families. Some use will also be made of the 1930 study in Detroit of families of 100 Ford employees. Comparison of food items can be made very readily and in an effective manner by reducing all food units to pounds. No analogous procedure can be used for the rest of the budget because of the widely varying character of the units and their widely varying significance.

Taking first the non-food items and comparing budget items represented in the Bureau of Labor Statistics index with items actually purchased by 1918 families, the following items or classes are either not represented at all in the index or are not given as much weight as they represented in family expenditures in 1918:

> Furniture and furnishings: Table linen; bath and kitchen toweling; curtains and draperies; lamps, clocks and other incidental furnishings; laundry equipment.
>
> House operation: Ice; postage and stationery; household expenditures, other than soaps.
>
> Miscellaneous: Education and advancement, other than newspapers; automobile expenditures (not included in 1918 but important today); recreation (except movies) (a) other recreation, (b) children's toys; gifts and contributions; life insurance and savings.

The mere presentation of a list of items such as these which are either not represented or inadequately represented in the index budget is not in itself proof that the index is erroneous or that their inclusion would make any great difference in the value of the index at any time. It all depends on how important are the excluded items in the typical family budget and how their prices move. If they are items of large expenditure they may make a considerable difference in the index. As a matter of fact there are two items in the above list that are of rather great importance at the present time, namely, automobile expenditures and life insurance and savings, and it might be said that the miscellaneous

or sundries group as a whole is not represented in the index by a weight that corresponds to its importance in the family budget of a workingman.

So far the judgments are tentative and the facts are hard to get at. The situation is somewhat more satisfactory when it comes to the food budget, for it is possible to reduce all consumption to pound units and to compare items and classes in terms of pounds consumed. Table I shows food consumption of 100 Detroit families in 1930, of 3,827 families in North Central States 1918 and of the Bureau of Labor Statistics index for Minneapolis. The outstanding differences between actual consumption and the index budgets as shown here are the following: Green vegetables; fresh fruits; meats, fish, etc.; miscellaneous items; meals outside home.

TABLE I

FOOD WEIGHTS: FAMILY BUDGET STUDIES AND BUREAU OF LABOR STATISTICS COST OF LIVING INDEX

(All units reduced to pounds)

	100 families, Detroit, 1930	3,827 families, North Central States, 1918	Bureau of Labor Statistics, Cost of Living Index
Cereals	*993.2*	*938.7*	*920*
Bread	646.2	451.1	521
Flour	198.7	299.0	263
Breakfast foods	46.9	51.7	51
Other cereal products	101.4	133.9	85
Milk	*1,212.2*	*827.2*	*800.8*
Vegetables and fruits	*1,673.9*	*1,730.8*	*1,032.0*
Potatoes	603.3	837.2	810
Other roots and tubers	120.5	124.4	62
Legumes	52.0	42.3	31
Green vegetables	277.6	316.3	70
Canned vegetables	69.9	38.6	36
Fresh fruits	497.9	333.7	51
Canned fruits	31.7	12.1	...
Dried fruits	21.0	26.2	22
Fats and oils	*183.0*	*173.1*	*162*
Sugars	*213.5*	*191.9*	*154*
Lean meats, fish, eggs, cheese, etc.	*550.62*	*517.1*	*339.5*
Lean meats	353.0	381.0	239
Sea food	33.32	36.4	9
Eggs	121.3	77.4	79.5
Cheese, nuts, gelatin	23.0	22.3	12
Beverages	*42.8*	*53.0*	*50*
Miscellaneous	*28.6*	*19.1*	...
Meals outside home	*93.0* (113.6 meals)	? (62.9 meals)	... ...

I believe it is safe to say, on the basis of this evidence alone, that the food budget of the Bureau of Labor Statistics index is defective and sufficiently so that it is worth while to consider its revision in the near

future. The National Industrial Conference Board does not construct a separate food index but uses that of the Bureau of Labor Statistics. Green vegetables and fresh fruits were important elements in the dietary of workingmen's families in 1918 and they are even more important elements today, as shown in the Detroit study, and they are almost entirely unrepresented in present indexes. So with meats, over 500 pounds consumed as against 340 represented in the index. So with lunches and meals outside the home; they are becoming increasingly important but they have no representation in the index.

One further thing has been done to test the effect of these excluded items and that is to construct tentative indexes for various subdivisions of the family budget based first upon the complete budget as represented by actual family expenditures and second upon those parts of the budget which have representation in the Bureau of Labor Statistics cost of living index. I wish to emphasize that these figures are tentative in character and cannot be taken to measure changes in cost of living between the two dates given in any proper sense. They are based upon price data collected recently in Minneapolis for the purpose of constructing a local cost of living index and the price data are almost wholly those that will be used in that index. But budget data have been pieced out in some cases in a somewhat arbitrary manner in order to make this comparison possible. It is not a comparison of local weights and prices with Bureau of Labor Statistics weights and prices; but rather a comparison using first weights and prices for a reasonably complete list, and second selecting from this complete list those items which are fairly represented in the Bureau of Labor Statistics index. In other words, the comparison is between a larger sample and a smaller sample to test the representative character of the latter. This test is made as between 1929 and 1932 for all budget items except foods, it being necessary to exclude foods because it was impossible to get a full set of food prices prior to the year 1932. Results are shown in Table II. By comparing aggregate costs in the complete budget and in the partial budget one can see from this table how large the smaller sample is compared to the larger. For example, $314 for clothing in 1929 of which $225 are included in the smaller budget.

The net result on the clothing index is astonishingly small. Despite the fact that the Bureau of Labor Statistics list contains no quotations for gloves and mittens, none for women's and girls' headgear, no overshoes for men or boys and no outer garments of any sort for girls except a coat, the percentage change for the clothing budget is almost identical in the two cases. The National Industrial Conference Board index (1929 list) contains no quotations whatsoever for children's clothing.

TABLE II

CHANGING COST OF LIVING, 1929 TO 1932 AS AFFECTED BY THE REPRESENTATIVE CHARACTER OF THE BUDGET

	Complete budget		B. of L. S. budget		Relative 1932 on 1929 base	
	1929	1932	1929	1932	Complete budget	B. of L. S. budget
Clothing						
Men	$81.986	$50.950	$58.833	$37.608	62.14	63.92
Boy, 12–14 years	65.472	41.995	54.957	35.367	64.14	64.35
Woman	95.893	52.685	71.370	38.184	54.94	53.50
Girl, 6 years	70.691	37.642	40.502	20.859	53.25	51.50
Total clothing	$314.042	$183.272	$225.662	$132.018	58.36	58.50
Furniture and furnishings	142.292	96.150	73.872	49.272	67.57	66.70
Rent	420.000	384.000	420.000	384.000	91.43	91.43
House operation						
Utility services	169.050	160.220	163.650	152.720	94.77	93.32
Household expenditures	24.626	22.028	15.650	13.798	89.45	88.17
Toilet expenditures	19.920	17.590	9.520	9.190	88.30	96.53
Total house operation	$213.596	$199.838	$188.820	$175.708	93.56	93.06
Miscellaneous						
Literature	11.400	11.400	8.400	8.400	100.00	100.00
Health	134.460	133.835	122.940	122.315	99.54	99.49
Transportation	265.430	261.750	39.000	39.000	98.61	100.00
Recreation	35.400	27.000	17.000	15.000	76.27	84.24
Gifts and contributions	29.500	29.500	.....	.....	100.00	.....
Tobacco	27.200	27.200	27.200	27.200	100.00	100.00
Life insurance and savings	193.800	193.800	.....	.....	100.00	.....
Total miscellaneous	$697.190	$684.485	$214.540	$211.915	98.18	98.78
Total Cost of Living (except food)	$1,787.120	$1,547.745	$1,122.894	$952.913	86.61	84.86

Furniture and furnishings are only about 50 per cent represented in the partial budget yet again the difference in the percentage change from 1929 to 1932 is small. Rent is the same figure in both budgets, as it necessarily must be, being a single item. House operation is fairly completely represented in the smaller budget, the omitted items totaling about twenty-five dollars in an aggregate of two hundred. The difference in the indexes again is insignificant. Totals for miscellaneous items differ widely in the two budgets, nearly $700 in the complete budget as compared with just over $200 in the partial budget but again the index of change shows no significant difference. Automobile costs and life insurance and savings make up the greater part of the difference in aggregate values in the two miscellaneous budgets. Finally, the total cost of living budget (except foods) shows a difference of about $600 in the aggregate expenditures for the two budgets but a difference in percentage change in costs between 1929 and 1932 of less than two points, or 86.6 as against 84.9 per cent. If the figures can be accepted at their face value they speak highly of the accuracy obtained by the sample budget used by the Bureau of Labor Statistics. Never-

theless, study of the several sub-indexes indicates that this difference is a significant one.

As said before the two food budgets could not be compared for price change from 1929 to 1932 because of the impossibility of getting food prices in 1929. Food prices for a greatly extended list of foods have been obtained weekly since January, 1932, and therefore, to make any comparison of complete and partial food budgets it was necessary to take two dates in 1932. The periods selected were the months of January and July. An unfortunate part of this comparison is that all seasonal items had to be omitted and the comparison therefore fails in part to do the thing that is especially important, namely, to include those fruits and vegetables which are important elements in present-day dietaries but which are not represented in the food budgets of present-day cost of living indexes, since many of these items are highly seasonal. Table III shows the comparisons that were possible with the

TABLE III

CHANGING COST OF FOOD, JANUARY TO JULY, 1932, AS AFFECTED BY THE REPRESENTATIVE CHARACTER OF THE BUDGET

	Complete budget		B. of L. S. budget		Relative July on January base	
	January 1932	July 1932	January 1932	July 1932	Complete budget	B. of L. S. budget
Cereals	$72.488	$68.052	$59.616	$57.444	93.88	96.36
Milk	57.886	51.689	56.611	50.414	89.29	89.05
Vegetables	52.157	31.687	19.266	17.742	60.75	92.09
Fruits	42.203	37.015	16.901	16.931	87.71	100.18
Fat and oils	43.056	34.213	39.209	31.615	79.46	80.63
Sugars	12.571	11.039	10.747	9.575	87.81	89.09
Lean meats, etc.	111.241	97.314	91.838	83.481	87.48	90.90
Beverages	16.347	15.234	14.599	13.973	93.19	95.71
Miscellaneous	7.762	6.802	.....	.....	87.63	.....
Totals	$415.711	$353.068	$308.787	$281.175	84.93	91.06

limited data at hand. The sub-groups which show outstanding differences in this comparison are, as might be expected, vegetables and fruits; in the former 61 per cent as compared with 92, in the latter 88 as compared with 100. It will be noted also that lunches are not included in the complete budget. The net result for the total food budget shows a difference of about six points in the two cases—85 per cent for the complete budget and 91 per cent for the partial budget.

As a final summary of the effect upon the index number of change in the cost of living, the result of this test seems to be that, though a few significant figures occur among the sub-groups that compose the total budget yet the effect in this instance upon the final index of total cost of living was small. But to generalize from this case and say that the

budget lists used in existing indexes are adequate representations of actual expenditure budgets is farther than I should wish to go. There is no guarantee, on rational grounds, that the differences between sub-groups will always tend to compensate one another. It seems to me especially important (1) that food lists should be extended to include a greater representation of fruits and vegetables that are now a regular part of the workingman's dietary; (2) that some additions could be made to the clothing budget, particularly in the National Industrial Conference Board index which includes no children's clothing items; and (3) especially that some of the important items of expenditure in the sundries budget, such as life insurance and savings, meals outside home and automobile expenditures should be included. These latter expenditures are on the margin between maintaining a given standard of living and not maintaining it and for that very reason are a very important part of that standard.

THE RELATIVE VOLUME OF TECHNOLOGICAL UNEMPLOYMENT

By Willford I. King

For three years now, American Industry has been proceeding at a snail's pace and millions of workers have been idle. The unusual persistence of this period of unemployment has convinced thousands of thinking people that we are, at present, confronted with a new problem. We are told that we are victims of the machine age—that invention has been carried so far that the products of industry cannot be marketed, and that the inevitable result of this situation is continuous unemployment for a large proportion of our would-be workers. However, we hear other authorities asserting with equal vehemence that technological unemployment is mainly a figment of the imagination. Is there any way of ascertaining which of these views comes nearer to the truth?

There can, of course, be no question but that the displacement of men by machines has been going on at a rather rapid rate ever since the opening of the Industrial Revolution. Even if it be true that most of the men displaced find new work rather promptly, there are doubtless many instances in which highly-skilled workers may be compelled to accept relatively unskilled work at reduced pay. In the case of the older men especially, their former economic status may never be regained. Presumably, in the best of times, many of the displaced workers will be idle for days or weeks before they obtain new positions. It is clear, therefore, that there is such a thing as technological unemployment. However, two issues remain in dispute:

1. Are orthodox economists justified in their usual contention that, as a rule, new inventions automatically increase the demand for labor in other fields to approximately the same extent that they decrease the demand for labor in the field in which economies are effected, and that, therefore, in normal times, even though these inventions cause considerable labor turnover, the net volume of unemployment ascribable to technological forces tends to be very small?
2. Is it correct to assume that technological advances in industry are responsible for the plight of a large proportion of the persons now included among the unemployed?

Our attitude toward many of the measures proposed for getting the nation out of the difficulties by which it is now beset evidently depends upon the way in which we answer these questions. Apparently, how-

ever, no one has, as yet, seriously attempted to ascertain either what share of present-day idleness may legitimately be ascribed to displacement of men by new machines or new processes, or what changes, if any, have taken place during recent decades in the percentage of would-be workers who are victims of technological unemployment.

As a matter of fact, it is doubtful that available data are adequate to enable the statistician to determine with anything like precision what proportion of the existing volume of unemployment is due to technological causes. However, the figures at hand do throw much light on the problem, and it therefore seems eminently worth while to see what they indicate.

Once in ten years, the Bureau of the Census ascertains the number of persons "gainfully occupied." The enumerators are instructed to include under this heading all persons usually employed as well as those actually having jobs. In so far, therefore, as the enumerators are successful in ascertaining the true facts, the percentage of persons counted as having occupations is not affected by the existence of unemployment. It is, however, readily conceivable that men put out of work by machines might, after a long period of idleness, reach the stage where they would fail to report themselves as attached to any industry. If this were commonly true, and if the number permanently displaced by machines were large, the percentage of the adult population reported as having gainful occupations would decline sharply. It is, therefore, worth while to examine carefully the trend of the percentages.

Changes during recent decades in the age, sex, and racial composition of the population make it imperative to confine all comparisons to relatively homogeneous groups. Let us first consider the case of adult white males. If mass production by machine processes has outrun the demand for goods, we might well find a decline in the proportion of such adult white males which the census enumerators have reported as engaged in gainful occupations. What are the facts in the case?

By extracting data from the Censuses of Occupations for four periods, and, in some cases, interpolating on ogives in order to secure similar age classifications for all years, one is able to arrive at results which are believed to approximate rather closely the facts in this connection as regards both native white males and foreign-born white males.

From the figures in Table I, it is evident that, at every census date, the proportion of either native-born or foreign-born white males 25 to 64 years of age reported as not engaged in any gainful calling is very small. For example, in April, 1930, the number of such males having no income-producing occupation constituted only 4 per cent of all males of this class, and this percentage has shown no material change

TABLE I

RESPECTIVE PERCENTAGES OF NATIVE WHITE AND FOREIGN-BORN WHITE MALES, 25 TO 64 YEARS OF AGE, INCLUSIVE, ENGAGED IN GAINFUL OCCUPATIONS

Census date	Thousands of males of given age		Thousands of males of given age gainfully occupied		Per cent of males of given age gainfully occupied	
	Native white	Foreign-born white	Native white	Foreign-born white	Native white	Foreign-born white
1890.....	8,364 *	3,486 *	8,064 *	3,379 *	96.4	96.9
1900.....	10,953 **	4,036 **	10,387 †	3,856 †	94.8	95.5
1910.....			¶	¶		
1920.....	17,020 **	5,857 **	16,269‡	5,639 ‡	95.6	96.3
1930.....	20,882 †† §	5,803 †† §	20,078 § ‖	5,560 § ‖	96.1	95.8

* Eleventh Census of the U. S., 1890, *Population*, Part II, pp. 2–5, 378–385, 390–391.
** Fourteenth Census of the U. S., 1920, Vol. II, *Population*, p. 159.
† Twelfth Census of the U. S., 1900, *Occupations*, pp. 20–25, 28–29. Adjusted for the Continental U. S. only.
‡ Fourteenth Census of the U. S., 1920, *Occupations*, p. 377.
†† Census Bulletin released June 20, 1932, *Population of the U. S. by Five Year Age Periods.*
§ Figures include an adjustment to include Mexicans. They were counted as colored in 1930 but as white in earlier censuses. The adjustment does not affect the percentages noticeably.
‖ Fifteenth Census of the U. S., 1930, *Occupation Statistics*, U. S. Summary, Table 20.
¶ Figures not available.

since 1890. When we consider that many adult males are mentally or physically incapacitated, and also that many men under 64 have voluntarily retired from work, this small percentage leaves little room for any considerable number of hypothetical victims of unemployment so persistent in nature as to cause the men affected to consider themselves no longer connected with any occupation or industry.

It appears, therefore, to be perfectly clear that, if technological unemployment exists among men in any considerable volume, it must be looked for among those who count themselves as still connected with industry, even though they are temporarily out of work. What proportion of men are in this position?

In the Census [1] of April, 1930, the enumerators attempted to ascertain, for every man out of work, the immediate causes leading to his unemployment. One of the categories under which the assigned reasons have been classified is "Industrial policy." Technological unemployment represents only one of the five sub-heads carried under this broad title. Since only 96,957 out of 2,686,145, or 4 per cent of the unemployed males, were reported as being victims of "Industrial policy," it is evident, that, in the opinion of the idle men themselves, lack of work caused by the advent of new machines accounted for but a very minor fraction of the total unemployment existing in April, 1930. However, it is entirely possible that most of the workers who were victims of

[1] *Census of Unemployment*, Vol. I, p. 12.

the machine ascribed their difficulties to some other more apparent cause.

It is in the field of manufacturing that the "Machine Age" is popularly supposed to have wrought the greatest havoc. It is important, therefore, to devote especial attention to the available data relating to this industry. The Census of Unemployment for April, 1930, shows that 11,137,270 persons, male or female, were engaged in manufacturing and mechanical industries other than building, automobile repair, and the independent hand trades. Of this number, the enumerators reported that 1,015,168, although able to work, were either out of a job and looking for one, or on lay-off without pay,[1] though actually or nominally having a job. Since many chronic loafers would normally be expected to assert that they were looking for jobs, and since, at a time when unemployment was so common, few of those out of work would hesitate to report the fact, one would naturally expect the number just mentioned to be an outside estimate rather than a figure having equal likelihood of error in either direction. On the basis of the returns just cited, it appears that, in April, 1930, only 9.12 per cent of able-bodied persons attached to the manufacturing industry were either looking for work, or were not working at the jobs which they held or were supposed to hold. However, this figure relates to all employees, and hence it probably does not represent correctly the proportion of operatives unemployed, for, in April, 1930, unemployment among proprietors and salaried employees in manufacturing was still presumably very small. The Census of Manufactures shows that, on December 14, 1929, or thereabouts, 133,210 proprietors and firm members and 1,358,775 salaried workers were employed by manufacturing enterprises.[2] If these are subtracted from the 11,137,270 persons connected with manufacturing, we have remaining 9,645,285 foremen, mechanics, and other operatives engaged in factory work. If we assume that all the 1,015,168 persons looking for a job belonged in these ranks, we find that the percentage of factory operatives reported as out of work was in the neighborhood of 10.5 per cent.

As every one remembers, April, 1930, was well down the slope on the decline leading to the great depression. The great orgy of credit buying had terminated. The net result was that demand for factory products had shrunk sharply and workers had been dismissed in large numbers. The Federal Reserve Board index of employment for all classes of factory operatives had declined from 105.4 in September, 1929, to 92.6 in April, 1930, a fall of 12.1 per cent. Since, not even at

[1] *Census of Unemployment*, 1930, Vol. I, pp. 53–55.
[2] Census of Manufactures, 1929; *Statistics for Industries and States*, p. 3.

the height of a boom, do all branches of manufacturing operate at full capacity, the volume of unemployment among factory workers covered by the reports of the Federal Reserve Board must have been noticeably greater than 12.1 per cent in April, 1930. Yet the Census of Unemployment showed not more than 10.5 per cent of idleness among erstwhile factory workers. How is this discrepancy to be accounted for?

No positive answer can be given to this query, but there are at least three possible explanations. First, it is probable both that the Federal Reserve Board data are overweighted with reports from large concerns, and that large concerns had more unemployment than the average.[1] Second, it is not improbable that the September, 1929, spurt in manufacturing pulled into that field a considerable number of workers not normally employed in that industry. In April, 1930, such workers would probably be reported to the census enumerators as attached to industries other than manufacturing. Possibly, therefore, it would be more logical to assume that the period January to July, 1929, represented a fair picture of complete employment in manufacturing. The average index for that period [2] was 101.0. On this basis, that sudden fall in demand after September, 1929, which pulled the employment index down to 92.6, was responsible for putting out of jobs only 8.3 per cent of factory operatives—a figure slightly less than the 10.5 per cent of such workers shown by the Census of Unemployment to have been looking for work in April, 1930. Third, it is possible that a considerable number of erstwhile factory operatives actually unemployed in April, 1930, were counted by the enumerators as being at work. The likelihood of such an error in enumeration is, however, of course materially lessened by the fact that, at the date of the census, the subject of unemployment was being greatly stressed, not only by the census authorities, but by the public at large.

Even if we assume that the census enumerators counted only two-thirds of those actually unemployed, an allowance for error which seems unreasonably large, the proportion reported as out of work would be only 15.8 per cent. Since on the basis of the Federal Reserve Board figures at least 8.3 per cent of idleness was accounted for by the industrial decline occurring after September, 1929, we are still faced by the fact that, in April, 1930, among workers usually engaged in manufacturing, the total proportion of persons unemployed because of adverse weather conditions, labor disputes, breakdown of plant or equipment, seasonal lay-offs, changing from one job to another, disagreeable per-

[1] This hypothesis would accord with the indications of the data secured by the author during the 1921 depression. See pp. 30–34 of the report of the National Bureau of Economic Research entitled *Employment Hours and Earnings in Prosperity and Depression.*

[2] U. S. Department of Commerce, *Survey of Current Business, 1932, Annual Supplement*, p. 53.

sonal characteristics, dissatisfaction with the pay obtainable, and other miscellaneous causes, as well as those who were victims of technological unemployment, could not have totalled much more than 7.5 per cent. An allowance of 3 or 4 per cent for technological unemployment in this field, in April, 1930, would then seem to be an outside limit, the most probable amount of this type of unemployment being far smaller.

By following a procedure similar to the one used in the case of manufacturing, one may arrive at an estimate of the probable amount of technological unemployment existing in April, 1930, among workers usually employed by the steam railways of the country.

From what has been said, it seems to follow that the person who argues that, in April, 1930, technological unemployment was a very serious matter, must attack the validity of the assumptions made in the analysis just presented. Presumably no one would contend that technical improvements displacing workers have been confined mainly to fields other than manufacturing and railroading. It may, however, be argued that those workers driven out of manufacturing and railroading by technical improvements had drifted into trade, domestic or personal service, or unclassified industries, and then became unemployed. Since the Census of April, 1930, showed the percentages of unemployment among workers in these other fields to be well below the average for all industries, this theory lacks tangible support.

From what has been said, it appears to be demonstrated quite conclusively that though, for at least two centuries, new methods of production had been contributing materially to the rate of labor turnover, the cumulative effect observable in 1929 was that technological unemployment was almost negligible in amount. But what has been happening since 1929?

Studies made by Dr. Boris Stern for the United States Bureau of Labor Statistics show that, as might be expected, new processes in industry have recently, as in the past, been forcing workers out of many occupations. However, under present conditions, the breakdown in the demand for labor has interfered with the absorption of these men by other industries. One can, therefore, truthfully state that an unknown but possibly considerable fraction of those now out of work lost their jobs because of technological changes in industry.

There is, however, a vast gulf between this statement and the assertion that a large proportion of those now out of work are idle because production has outrun consumption—in other words that they are victims of the "Machine Age." The latter point of view clearly assumes that, while improved methods of production had not adversely affected employment in the two centuries preceding 1930, they have, during the

last three years, developed qualities so malignant as to menace the very existence of the capitalistic system.

As a matter of fact, there is nothing in the statistical evidence now available to indicate that new inventions are not still continuing to benefit labor. It is absurd to blame technological improvements in methods of production for the evils resulting from our antiquated and unsound monetary system. Because of the imperfections in this system, the prices of most products of industry have been allowed to decline sharply. The obvious result is that employers can no longer hire the total labor force of the nation at the old wage rates. To adjust wage rates to lower levels is, however, a slow and difficult process. Unless the prices of the products of industry rise, unemployment is likely to continue until wages are adjusted downward to an extent approximately equal to the fall in the price level.

The question of exactly why the erstwhile workers now unemployed lost their jobs is not one of prime moment. For one reason or another they would have been discharged anyway, for industry could not pay their wages at the rates existing. They are victims, not of the "Machine Age," but of the law of supply and demand. Market conditions today simply are not such that the total labor supply of the country can be sold at the price at which it is offered.

The present situation may be summed up by saying that no facts or figures thus far discovered cast any doubt upon the approximate validity of the orthodox economic theory that the forces giving rise to technological unemployment tend, at the same time, to create a demand for new goods, and that the production of these new goods normally calls for a volume of labor roughly equalling the quantity displaced. From this premise, it follows that, since labor saving devices increase production without materially decreasing the ability of workers to find jobs, such devices are decidedly beneficial rather than injurious to society as a whole. Furthermore, the experience of the past shows clearly that, in the United States, labor tends to secure a liberal proportion of all gains in the national income. It follows that the belief that better methods of production are menacing our national welfare is nothing but an erroneous assumption, unsupported by logic or factual evidence.

DISCUSSION

By F. B. Garver

The discussion of the relative volume of unemployment by Professor King arrives at the conclusion that the relative number of men con-

stantly out of work because of technical change must be very small unless the census of the unemployed in 1930 was inadequate. To support this conclusion, modified as just noted, three sorts of evidence and reasoning are employed.

In the first place it is clear that not very much weight is attached by him to the fact that the four decennial census reports on occupations, from 1890 to 1930, failed to show any significant increase in the proportion of males aged 25 to 64 who reported themselves as not being attached to any industry, trade, or profession. It is, of course, hardly to be expected that men displaced by machinery would sit idle in a country where there was no unemployment insurance. They would attach themselves to some industry or occupation. But how many men had been ousted from jobs requiring skilled workmen and had drifted into the ranks of casual labor where employment was less regular and unemployment a greater evil the census does not tell us.

The second sort of evidence advanced by Professor King is derived from the Census of Unemployment of 1930, particularly the replies to questions concerning the cause of unemployment. Here the findings are that relatively few of the men unemployed at that time gave technical changes as the reason for their being out of work. It may be noted in passing that about a year after the census enumeration of 1930 the Employment Stabilization Research Institute at the University of Minnesota asked in their survey several questions concerning technical and management innovations and their results on employment. Here again there was little definite evidence that such innovations had thrown large numbers of men out of work. But it does not seem probable that the method employed by the census would yield results of very great accuracy. The effects of technical change are likely to be too far-reaching and too complex to be measured by so simple a device. A factory in any given city may close and throw men out of work and the explanation given by the firm may be that they were no longer able to meet the competition of plants in other parts of the country or even in a foreign country. Often their inability to do so will be owing to the better equipment of their competitors. In that case the men who lose their jobs are the victims of technological unemployment but it is very unlikely that they would be aware of the fact. Even the employers might not know why they had been crowded to the wall.

Often the introduction of machinery does not displace workers, but only prevents the hiring of new employees as the old leave their jobs. In still other cases skilled men will be displaced in one industry and will drift into another industry causing unemployment in the latter. Here again the questionnaire method would scarcely reveal the true

state of affairs. Finally, a substitute may gradually eliminate or greatly reduce employment in the production of what was formerly a staple article. This too would hardly be the sort of unemployment which would be recorded as technological.

Professor King has said that the conclusions arrived at by analysis of the available statistics are in accord with those reached through abstract economic reasoning. This statement is, of course, correct in the main if one leaves out of account socialist writers. But this conclusion from orthodox economic theorizing is not as convincing as one could wish it were. First, there is the earlier doctrine that every improvement is made because it promises a profit to some one. These profits which arise from the saving of labor must be expended either on the purchase of consumer's goods or on capital equipment. Labor displaced by the improvement will again be employed it is said in some other (or perhaps the same) occupation and real wages throughout industry will rise. One may surmise, however, that this reasoning has received the stamp of orthodox approval chiefly because it seems to have agreed with the facts in the past. Improvements have not in the past caused permanent unemployment and real wages have risen. But the logical necessity of the conclusion that improvement cannot produce permanent unemployment or lower wages is not clear. Pigou has stated theoretical conditions under which labor might be displaced and only re-employed at lower wages. The reasoning from the more recent productivity theory only arrives at the conclusion that an increase of capital will raise wages by assuming that instrumental capital is a complement to and not a substitute for labor. If it is a substitute, then wages may fall. When capital increases as a substitute and the wage level is maintained by the state, by trade unions, or by a policy of high wages pursued by the employers, unemployment must result.

TECHNOLOGICAL DISPLACEMENT OF LABOR AND TECHNOLOGICAL UNEMPLOYMENT

By Boris Stern

Dr. King's conclusion that "technological unemployment is responsible for but a small part of the idleness now existing" is the logical outcome of the sources on the basis of which he chose to develop his thesis. Neither the Census of Occupations, nor the 1930 Unemployment Census, even if faultlessly carried out by the enumerators, could possibly contain enough information for a study on technological unemployment. The census data are based entirely on reports secured from individual unemployed workers, very few of whom even to the present day know the exact cause of their unemployment. It is not a regular policy of factory foremen, when laying off help, to give them the precise reasons for their discharge and it is left entirely to the intelligence of the individual workers to establish the connection between their unemployment and the previous installation of some kind of machinery which took away their jobs.

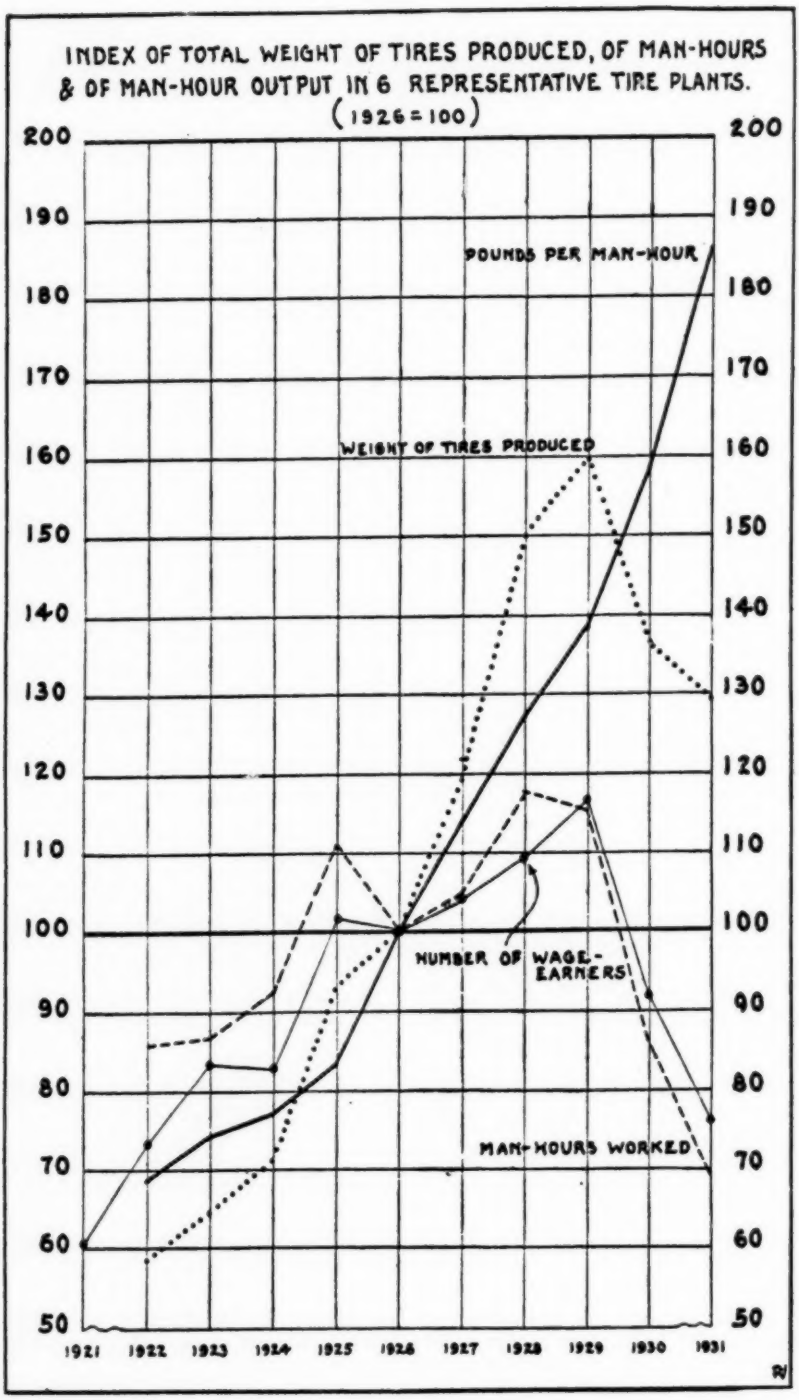
But technological displacement of labor does not always work so simply as to establish a clear cause and effect relationship between the installation of machinery and unemployment. Such revolutionary changes as the invention of the Owens Bottle Machine or the dial telephone, which completely took over the work formerly done by man power, thus establishing a clear case of technological displacement, do not occur very often, especially in the same industry. Much more important from the point of view of technological unemployment are the smaller and more frequent changes, which occur in large and small plants alike, day after day, replacing only part of the functions performed by hand labor, but increasing the output per worker in one part of the plant, eliminating a single worker here and a group of workers there and thus constantly reducing the labor time requirements per unit of output. Besides, the introduction of labor saving machinery in one plant does not necessarily result in the displacement of labor in that particular plant. The competitive advantages gained because of the introduction of new and presumably better machinery often enables the particular plant to enlarge its production at the expense of other plants. The outcome is that the workers of the less advanced plants lose their jobs, in which case even the plant foremen are not always familiar with the actual causes of the situation. Any thesis which is based on such vague notions of the individual unemployed workers as

to the actual cause of their unemployment is therefore bound to be incomplete, if not altogether misleading.

Dr. King, of course, admits that there can be no question but that the displacement of men by machines has been going on at a rather rapid rate since the opening of the industrial revolution. He also admits that there is such a thing as technological unemployment, which is to be understood not as a permanent factor in the economic life of the nation but merely as a contributing cause to our present unemployment situation. Technological changes or rather technological improvements (since all changes are for the sake of improvement) include any and all changes in the nature of the product, method of production, type of labor, hours of work, machinery and equipment used, etc., which result either in an improvement in the quality of the article produced or in an increase in the output per unit of labor time. It is conceivable that an improvement in the quality of the product may readily result in a decrease in the output per unit of labor time, thus actually increasing the volume of labor required for its production. Essentially, however, the object of improved technology is to reduce the labor costs of operation. The reduction is measured by the difference in the labor requirements per unit of output before and after the change in technology took place. Technological displacement of labor thus defined may and may not result in the immediate elimination of jobs or workers from the plant. It produces a surplus of labor time, and unless there is a corresponding increase in the total output some workers will be eventually eliminated as a direct result of the technological change.

Increased output per unit of labor time and increased total production are not entirely independent of each other. A reduction in the labor cost of production may bring with it an increase in the total output; and similarly an increased total output may pave the way for further reductions in the labor cost of production. From the point of view of labor employment, however, the two factors are at constant war with one another—increased output per unit of labor time displacing labor and increased total production putting labor back to work.

Let us therefore examine, more or less in detail, the effects of these two forces on the employment situation in a single industry. The December issue of the *Monthly Labor Review* contains an article on "Labor Productivity and Employment in the Tire Industry." The survey covers the production history of six representative pneumatic tire plants, with a combined production in 1931 of 29,000,000 tires, or 59.80 per cent of the entire industry. The original data on actual production given in the first three columns of Table I and the chart showing in index numbers the trends of total output, total man-hours


INDEX OF TOTAL WEIGHT OF TIRES PRODUCED, OF MAN-HOURS & OF MAN-HOUR OUTPUT IN 6 REPRESENTATIVE TIRE PLANTS.
(1926=100)
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
POUNDS PER MAN-HOUR
WEIGHT OF TIRES PRODUCED
NUMBER OF WAGE-EARNERS
MAN-HOURS WORKED
1921
1922
1923
1924
1925
1926
1927
1928
1929
1930
1931
W

worked and man-hour output of the six plants, are taken from that article. Column 4 shows the annual changes in the total production of the six plants, a plus sign indicating an increase and a minus sign a decrease in the total output as compared with the previous year. Column 5 gives the man-hours which were required to produce an amount equal to the differentials in the annual output at the average rate of production for that year. A plus sign indicates an increase in the man-hours required because of an increased total output, and a minus sign indicates a drop caused by the decrease in the total output. Column 6 shows the actual annual changes in the total man-hours worked which are derived by subtracting from the total man-hours worked during any one year the man-hours of the preceding year. The difference between the actual annual changes in the total man-hours worked and the corresponding increases or decreases in the man-hours caused by the changes in the total output represents the reduction in the total labor time caused by technological changes and constitutes the total volume of labor displaced, which is shown in column 7.

The continuous rise in the man-hour output of the six representative tire plants from 1922 through 1931 indicates that technological changes have taken place in these plants continually. From 1922 through 1929 there has also been a continuous annual increase in the total volume of production, which with one exception proved not only sufficient to reabsorb the surplus of labor time caused by the technological changes but actually resulted in net increases in the total labor time worked. In 1926 the increase of 35,275,000 pounds in the total output required at the rate of 16.48 pounds per man per hour, an increase of 2,140,000 man-hours. The net result, however, was a decrease of 3,433,000 man-hours. This was due to the fact that in increasing the man-hour output from 13.77 pounds per man-hour in 1925 to 16.48 pounds in 1926 the technological changes caused a total labor displacement of 5,573,000 man-hours. In 1927 and in 1928 the very large annual increases in the total output of the six plants were again not only sufficient to reabsorb all the labor displaced by technological changes but again resulted in net increases in the total man-hours worked. In 1929, however, the increase in the total output was only 49,392,000 pounds, which at the rate of man-hour output for that year required an addition of 2,167,000 man-hours. This total was not sufficient to overcome the surplus of 2,885,000 man-hours caused by the technological changes which increased the man-hour output from 20.97 to 22.82 pounds. The net result was therefore a decrease of 718,000 man-hours worked. In 1930 the total output of the six tire plants was reduced by 117,080,000 pounds. This drop from the 1929 output at the rate of 22.80 pounds

per man-hour caused a decrease of 5,135,000 man-hours. The net decrease of 9,001,000 man-hours was due to the fact that in addition to the reduction in the total output there was also a very large displacement of labor caused by technological changes which raised the man-hour output from 22.80 to 26.17 pounds. In 1931 the total production of the six plants was again reduced by 35,997,000 pounds. At the 1930 rate of 26.17 pounds per man-hour this reduction in the total output required a decrease of 1,376,000 man-hours. The net decrease, however, was 5,016,000 man-hours, thus indicating that during that year 3,640,000 man-hours were displaced by technological changes which raised the man-hour output from 26.17 to 30.67 pounds.

From 1922 through 1925 there was no unemployment in the six tire manufacturing plants, technological or other kind. In 1926 the revolutionary change in the method of tire building caused by the wholesale adoption of the flat drum process produced such a large displacement of labor that the increased total output could reabsorb only a part of that surplus labor, leaving 3,435,000 man-hours completely unemployed, at least so far as the six plants were concerned. All the men who represented this volume of labor were technologically unemployed. During 1927 and 1928 the annual very large increases in the volume of output not only reabsorbed all the labor which was technologically displaced during those two years but created enough work for those who lost their jobs in 1926 (if by that time they did not get employment elsewhere) and in addition some 2,000,000 man-hours had to be supplied from sources outside the six plants. In 1929, however, a net surplus of 718,000 man-hours were left technologically unemployed. Then the depression came. Between 1929 and 1930, the total production of the six plants dropped nearly 15 per cent. At the 1929 rate of output this drop in the total production called for a reduction of 4,475,000 man-hours. Actually there was a decrease of 9,001,000 man-hours, due to an additional technological displacement of 3,865,000 man-hours. Of the men who lost their jobs in 1930 because of the surplus of 9,001,000 man-hours, 43 per cent were technologically unemployed. Between 1930 and 1931, the total production of the six plants fell slightly less than 9 per cent. This reduction at the 1930 man-hour output called for a decrease of 1,376,000 man-hours. The actual drop was 5,016,000 man-hours because of an additional 3,640,000 man-hours which were displaced technologically because of the increased man-hour output from 26.17 to 30.67 pounds. Of the men who lost their jobs in 1931 nearly 73 per cent were technologically unemployed.

Between the peak of 1928 and 1931 the six plants dropped as surplus labor 14,735,000 man-hours, or nearly 41 per cent of their 1928 total.

If the men who lost their jobs because of this labor surplus are a part of the present unemployment total (and it may at least be doubted that they found employment in other occupations because of the general character of the depression) then 70.5 per cent of them are technologically unemployed and the remaining 29.5 per cent are unemployed because of a drop in the total production of the six plants.

The industry here selected as a sample may appear somewhat exceptional because of the remarkable technological improvements which raised the output per man per hour from 11.28 pounds in 1922 to 30.67 pounds in 1931, nearly threefold. Nevertheless, if the productivity studies of the United States Bureau of Labor Statistics represent the true facts of what happened in the respective industries covered by the surveys, there were many other industries with approximately the same trend of development, as shown in the manufacturing of pneumatic tires. Whether or not the vast surplus of labor created by the technological improvements will in the long run be put back to work by another sweep of increased production which was characteristic of the 1922–1929 period, is beyond the scope of the present paper. The writer also admits that at present he cannot think of any mathematical or other device by which one could calculate even approximately the proportion of those presently unemployed which may be ascribed to technological causes. There are, however, enough data available to indicate that this proportion is very large, much larger indeed, than that intimated in Dr. King's paper.

TABLE I

VOLUME OF TECHNOLOGICAL LABOR DISPLACEMENT IN SIX REPRESENTATIVE TIRE PLANTS

Year	Actual production			Change in total output (Pounds) *	Change in man-hours caused by change in total output *	Net change in total man-hours worked *	Total volume of labor technologically displaced (man-hours)
	Pounds	Man-hours	Pounds per man-hour				
1922	295,222,000	26,165,000	11.28	.....	.....	.....	.....
1923	324,544,000	26,431,000	12.28	+ 29,322,000	+2,388,000	+ 266,000	2,122,000
1924	357,863,000	28,161,000	12.71	+ 33,319,000	+2,622,000	+1,730,000	892,000
1925	466,238,000	33,860,000	13.77	+108,375,000	+7,870,000	+5,699,000	2,171,000
1926	501,513,000	30,427,000	16.48	+ 35,275,000	+2,140,000	−3,433,000	5,573,000
1927	599,642,000	31,867,000	18.82	+ 98,129,000	+5,215,000	+1,440,000	3,775,000
1928	752,333,000	35,885,000	20.97	+152,691,000	+7,283,000	+4,018,000	3,265,000
1929	801,725,000	35,167,000	22.80	+ 49,392,000	+2,167,000	− 718,000	2,885,000
1930	684,645,000	26,166,000	26.17	−117,080,000	−5,135,000	−9,001,000	3,866,000
1931	648,648,000	21,150,000	30.67	− 35,997,000	−1,376,000	−5,016,000	3,640,000

* (+) signifies an increase; (−) a decrease.

THE CENSUS OF UNEMPLOYMENT

By George B. L. Arner

Probably the determining reason for taking the Census of Unemployment was the need of a "norm," or actual count of the unemployed by occupation or industry, which could be related to the indexes of trend of employment prepared by the Bureau of Labor Statistics or those of the Federal Reserve Board, in order to make possible current estimates of the extent of unemployment. At the time the plans for the census were formulated, the task of enumerating the unemployed did not appear to be formidable. If the census had been taken in 1929, the returns would have given us a measure of the unemployment of a prosperous year, unemployment due, mainly, to labor turnover and technological changes. Before the actual enumeration, however, the situation was complicated by the rapid increase in unemployment due to the decline in business activity. This did not destroy the value of the statistics as a norm, but it did increase the difficulties and cost of enumeration, classification and tabulation.

The first publication of final figures from the unemployment census was in the form of a series of state bulletins, the first of which, for the State of Delaware, appeared on November 26, 1930.[1] These bulletins presented for each state the returns by unemployment classes and sex. The returns in class A (persons out of a job, able to work, and looking for a job) and class B (persons having jobs but on lay-off without pay, excluding those sick or voluntarily idle) were shown by sex for counties and for urban places of 10,000 or more. For the state and for cities of 50,000 or more, these two classes by sex were tabulated by age in five-year periods, color and nativity, period of idleness, family relationship, ability to speak English, and industry groups. The complete series of state bulletins, with a United States summary bulletin, were assembled and bound together as Volume I of the Unemployment Reports, which appeared in January, 1932.

The tabulation of detailed statistics from the April, 1930, census was hardly under way before there was an insistent demand for a supplementary enumeration to determine what changes had taken place in the months of economic recession since the April census. In response to this demand, the Census Bureau, in January, 1931, undertook a sample census covering 18 entire cities and three boroughs of New York City.

[1] For the history of the Census of Unemployment through 1930 see Proceedings of the American Statistical Association, March 1931, page 189.

The returns from this census, comprising about 2,400,000 schedule entries, were coded, the entries counted by unemployment classes for each city, and the figures given to the public on March 21, 1931, less than one month after the receipt of the last of the schedules from the local supervisors.

Volume II of the Unemployment Reports is arranged by subjects, rather than by states, and shows nothing for areas smaller than states or cities of 100,000 inhabitants. The first chapter presents first the two most important unemployment classes (class A and class B) by sex and occupation in comparison with the number of gainful workers 10 years old and over, similarly classified. For the United States as a whole the classification is by 330 occupations and occupation-industry groups. For states and for cities of 100,000 and over the presentation is by selected occupations. Other tables show for the United States as a whole unemployment classes A and B by sex and occupation, by color and nativity, by five-year age periods, and by period of idleness. The limitations of space precluded the publication of these detailed tables by states and cities, but the material was tabulated in full for each area. These detailed tabulations for states and cities of 100,000 or more are on file at the Census Bureau and may be obtained by anyone who will pay the cost of transcription.

The second and third chapters of Volume II present statistics derived from a sort of the punch cards for unemployment classes A and B by period of idleness, sex, color and nativity, and a tabulation by reason for idleness, age, marital condition and family relationship. The published tables from this count show for the two unemployment classes separately by sex, for the United States and for geographic divisions: (a) Period of idleness by reason for idleness; (b) period of idleness by age; and (c) period of idleness by family relationship. In a separate chapter females in unemployment classes A and B are shown by marital condition for the United States by period of idleness and by color and nativity, and by marital condition without cross classifications for geographic divisions, states, and cities of 100,000 inhabitants.

In Chapter IV an attempt has been made to estimate the extent of part-time employment. Part-time employment is underemployment, rather than unemployment. In its social effects, however, part-time employment may differ only in degree from true unemployment. The worker who is on part time usually receives only a proportional part of his full wage. The reduction of work from full time to part time may be accomplished (a) by reducing the number of hours of work in the day, (b) by reducing the number of days worked in the week or month, or (c) by making the employment irregular or intermittent.

Part-time employment on the first basis can not be estimated from the census unemployment returns, as no questions were asked as to the number of hours of work in a day. Part-time employment of other types was returned on the census schedules only if the person on part-time work was idle on the day preceding the call of the enumerator.

Part-time workers who were on a short week basis, if returned on the unemployment schedule, would naturally be shown as "persons having jobs, but on lay-off without pay" (class B). All persons reported as having jobs were asked to state the number of days in a full-time week and also the "number of days worked last week." If it may be assumed that part-time employment is equally distributed through the full-time week, it is possible to estimate the total number of persons working a specified number of days in a specified full-time week from a tabulation of the answers to these two questions. For example, if 1,000 persons were returned on the unemployment schedule as working 4 days last week out of a 6-day week, it may be assumed that as these persons were idle 2 days there must have been 2,000 other persons who also were idle 2 days, but who were at work on the day before the call of the enumerator. The calculation may be generalized by the following formula:

$$e = n\frac{b}{b-a}$$

in which

a = Number of days worked "last week"
b = Days in a full-time week
$b-a$ = Number of days idle "last week"
n = Number of persons reported
e = Estimated number on part time

This calculation was made only for significant combinations of "days worked last week" and "days in a full-time week." The combinations selected were for persons working 2, 3, or 4 days out of a full-time week of 5, 5½, 6 or 7 days. These 12 combinations included 64.6 per cent of all persons who reported "days worked last week." The calculations were made separately for each sex in each area, and the area estimates totaled for the estimate of part-time employment for the United States. The estimate is therefore only an estimate of the number presumably working part time, regardless of the number of days worked.

The final chapter of Volume II deals with the Special Census of January, 1931. The returns from this census were coded and tabulated as nearly as possible in the same manner as were the returns from the April census. The only subject which was omitted entirely in the

January census was family relationship. This information in 1930 was obtained from the population schedule, and it would have been difficult to obtain strictly comparable information in 1931, when only the unemployed were enumerated.

A comparison of the returns of the special census with the 1930 returns from the same areas reveals very striking changes in the unemployment situation in a period of nine months. The total number in class A in the 21 areas combined was 1,930,437, as compared with 775,560 in the same areas in April, 1930. The increase, amounting to 149 per cent, was used as the basis of the estimate of 6,050,000 unemployed made by the Secretary of Commerce on March 21, 1931. The total number in class B in the special enumeration area increased in the same months from 138,562 to 367,814. This increase was almost entirely confined to those reporting periods of idleness of less than two weeks and also reporting "days worked last week." There is reason to believe that in the nine months many of those who in April, 1930, reported themselves as having jobs to which they expected to return, had by January, 1931, abandoned hope of returning to these jobs and so reported themselves as "out of a job." If, in making the estimate of the unemployed in March, 1931, persons in class B with a period of idleness of more than two weeks, had been included, the estimate made at that time would have been increased only 550,000, or to 6,600,000.

The use of the Special Census of January, 1931, as a basis for unemployment estimates may be somewhat open to criticism, both because it was a sample census and because there were some unavoidable differences in the manner of enumeration. In April, 1930, the primary consideration was the enumeration of population, with unemployment secondary, while in January, 1931, the enumeration of the unemployed was the sole purpose of the census. These difficulties were, however, recognized at the time, and every effort was made to make the returns from the two enumerations comparable. When the preliminary returns from the special census were first published, the unexpectedly heavy increase aroused suspicions of the accuracy of the enumeration, but further study has increased the conviction that the two enumerations are fairly comparable.

While the special census covered only about 20 per cent of the total population, it covered areas which in April, 1930, reported 32 per cent of class A unemployment, and it was a 57 per cent sample of the population residing in cities of 100,000 or more inhabitants. The cities were selected to represent all sections of the country and in the distribution of their industrial and commercial activities, they appear to present a fair cross section of the urban population of the country.

The Census of Unemployment has been subjected to rather severe criticism, some of which was justified and some of which was unfair. It is unnecessary to recount these criticisms or to answer them specifically. Mistakes may have been made in the plans for the census, and in the method of classification. There was, however, no intentional misrepresentation of facts. If premature publicity was forced upon the Bureau, and if the facts as published were misrepresented and used for partisan purposes, the results of the census itself should not be discredited.

If another Census of Unemployment is ever taken, it would probably be well to depart in many respects from the plan of the 1930 census, even at the expense of loss of comparability. Since the real demand is for a quantitative measure of unemployment, it would be better to dispense with some of the detail obtained in 1930 in the interest of greater accuracy in the enumeration. The inquiry as to reason for idleness should be abandoned in any case. It is utterly impossible to collect useful statistics on reason for idleness in a general census of unemployment. The man who is unemployed either can not or will not give the real reason for his unemployment and the enumerator is not in a position to give him much assistance.

The unemployment schedule in 1930 was not complete in itself. The enumerator was instructed to inquire of each person reporting an occupation whether or not he or she was at work on the preceding day, and, if not, to make further inquiries and make entries on a separate unemployment schedule. The questions in regard to occupation, age, sex, color and nativity, family relationship and ability to speak English were not repeated. It was, therefore, necessary when the schedules were received in the Census Bureau to keep the population schedule and the unemployment schedule together until the population schedule could be coded and the code symbols transcribed to the unemployment schedule. This plan insured comparability between the statistics of gainful workers and statistics of unemployment, but it required far more time than would have been necessary for tabulating the unemployment returns alone. If the unemployment inquiry is repeated in 1940, either the unemployment questions should be restricted to three or four additional columns on the population schedule, thereby avoiding transcription and the cost of handling a separate schedule, or there should be a separate schedule complete in itself with the transcription done in advance by the enumerator. If this latter plan were followed, the schedules could be separated at once and separately coded and tabulated without the necessity of waiting for the coding of the population schedule. If this plan had been followed in 1930, it

would have been possible to announce complete preliminary totals by classes within two or three months after the date of the enumeration.

If another special census of unemployment should be taken before the next decennial census, a population census of the area covered should be taken at the same time. There is little value in unemployment statistics unless they can be shown in their relation to population, and particularly to the population gainfully occupied. Population shifts since 1930 have been so great that even if an unemployment census were taken in 1933 the unemployment returns could not safely be related to the population statistics of 1930.

There is great need for an enumeration of the population in 1934 or 1935, particularly in order to have some measure of the movement of the population from urban to rural areas. It would not be necessary to include in this enumeration all of the questions usually asked at the decennial census, and the omission of such questions as country of birth of the foreign born, citizenship, ability to read and write and to speak English, would leave room on the schedule for questions covering the employment status of every person ten years old and over, whether in school, at work, or, if not at work, whether seeking work, sick or disabled, or retired. If possible the enumeration should cover part-time as well as full-time unemployment. There could be no question then of underenumeration of the unemployed. Such an enumeration would make it possible to analyze underemployment as well as unemployment and to take stock generally of the extent to which our potential labor power remains unused.

In conclusion, I should like to emphasize further the value of the analysis of unemployment statistics which is summarized in Volume II of Unemployment Reports. The mere statement of the number of persons unemployed in accordance with some particular definition as to what constitutes unemployment is not, as most people seem to think, the only object of an unemployment census. If the definition of unemployment is accepted, the gross numbers have immediate value in themselves, but even for use as a norm for unemployment estimates, these figures must be analyzed by occupation, industry, and period of idleness. The value of these statistics in the formulation of programs for unemployment and old age insurance and in other sociological and economic studies may be appreciated more after economic reconstruction begins than in the present hysterical stage of the depression.

THE RELATIONSHIP BETWEEN WAGE RATES AND UNEMPLOYMENT

By Emmett H. Welch

I wish to emphasize at the outset that I am discussing the problem of general wage rates in relation to general unemployment, and not wage rates in a particular industry in relation to unemployment in that industry. The question of lowering wage rates in a particular industry or in a particular portion of an industry is entirely distinct from the problem of lowering general wage rates. Of course, it can be and has been shown rather conclusively in a few instances that wage rates in particular industries or in particular portions of an industry sometimes have to be lowered because of competitive conditions in that industry. But this question is entirely different from the one I am to discuss.

Available statistical information tends to show that wage rates have not decreased so much since 1929 as have wholesale and retail prices. As a result real wage rates—that is, wage rates expressed in terms of the quantity of goods they will purchase—have increased. During the same period, payrolls have decreased very rapidly and unemployment has rapidly increased. This condition has led many economists to conclude that more drastic and more prompt cutting of wage rates would have stimulated production, would have resulted in less unemployment, and would have encouraged business recovery. The proponents of this line of reasoning maintain that the relative rigidity and inelasticity of wage rates have resulted in unequal deflation, and that ultimate recovery can take place only when all items in our price system shall have been deflated in approximately the same proportions.

Let us consider this argument to see what assumptions are involved, and then see what statistical evidence there is, either to support or to contradict these assumptions.

The argument proceeds somewhat as follows: The further lowering of general wage rates would have resulted in a more rapid decline in costs. If costs had declined more rapidly, one of two things would have resulted. Either prices would have declined farther than they have, or prospective profits would have increased. It is argued that the first possibility would have resulted in greater demand, and hence in greater employment; and that the second would have resulted in increased production and employment due to the profit incentive.

Let us take up these arguments in order and see what assumptions are involved. We shall first assume that employers would have further reduced their unit selling prices by the same amount that unit

costs would have been reduced by still lower wage rates. In order that these reductions in prices received by the producers and wholesalers might result in greater demand, it would be necessary that retailers reduce their prices and pass on the savings to the consumers. It is a well-known fact that retail prices do not fall nearly so soon nor nearly so much, either relatively or absolutely, as wholesale prices. As a matter of fact, wholesale prices have fallen twice as much, on a relative basis, as cost of living since the middle of 1929. The difference between their absolute declines is, of course, smaller than the difference between their relative declines.

But even though retail prices had declined more than they have, what assurance do we have that demand would have increased in proportion to the decrease in prices? This assumes elasticity in the demand for all goods when we know that the demand for many goods is very inelastic. Furthermore, it is possible that more rapidly falling prices would have encouraged prospective purchasers to postpone their purchases still more than they have, hoping to buy at still lower price levels. It seems very doubtful, therefore, whether reduced wage rates would have increased demand, and hence payrolls, by as large an amount as payrolls would have been decreased by the reduction in wage rates.

Let us now assume that employers would not have reduced their selling prices when wage rates were reduced; this would have increased the prospects for profits. Under an economic system such as ours, where the prospect for profits is the chief incentive for business activity, it is true that an improvement in the prospects for profit will encourage production. However, the extent to which a further general reduction in wage rates would be an incentive to increased production may be debated. The individual business or industry approach would have to be used in order to answer this question. For instance, labor costs are not of the same relative importance in different industries. In some industries a 10 per cent decrease in labor costs would have a marked effect on the total cost of the product; in other industries such a reduction in labor cost would have little effect on total cost. In some industries the decreased costs due to reducing wage rates would merely result in smaller losses, and would not result in any profit incentive at all.

Nevertheless, let us assume that still lower general wage rates would have resulted in a substantial increase in the prospects for profits and hence in an increased rate of general production. The question that arises is: Could the additional goods produced have been sold?

If it be true, as many maintain, that our largest problem at the pres-

ent time is not how to increase production but rather how to distribute enough consumers' purchasing power to consume the goods we have produced and are able to produce, then merely providing a potential profit incentive without providing a market for the goods produced will be ineffective as a means of business recovery.

There is a tendency on the part of those who plead for drastic wage cuts during a period of depression to disregard the economic relationship existing before the depression, and to center attention entirely upon the relationships that exist and develop during a period of depression. It seems to me that an answer to the question as to how we got into a depression may help some in answering the question as to how we may get out of it. I am not going to attempt to say how we got into this depression, but I shall consider the period before the depression in my analysis of data bearing on depression wage policy.

In considering wages in relationship to consumers' purchasing power, it is not wage rates but the volume of wage payments in relationship to the volume of goods produced that is of most importance. From 1923 to the second quarter of 1929, the Federal Reserve Bank Index of physical production increased 26 per cent. The Bureau of Labor Statistics index of factory wage payments when corrected for cost of living showed no net change during the same period. In fact, except for the rise in the last quarter of 1928 and the first two quarters of 1929, real factory payrolls remained below the 1923 level throughout the period 1924–29.

The greater increase in physical production than in real payrolls from 1923 to 1929 is composed of a number of factors: (1) production, replacement, or maintenance of capital goods, (2) accumulated stocks of consumers goods, (3) installment and credit sales, (4) export balances, and (5) consumers' purchasing power other than wage payments. The first four of these factors have to be reckoned with in future periods of time; that is, capital goods are merely congealed consumers' goods. As capital goods are used up, they eventually take the form of consumers' goods, and will have to be purchased out of consumers' purchasing power in future periods. Accumulated stocks of consumers' goods clearly have to be consumed either out of future consumers' purchasing power or out of savings. Installment and credit sales enable consumption to proceed faster than consumers' purchasing power, but this must be compensated for later. Finally, our net export balances will probably disappear now that we are a creditor nation. The fifth factor alone, that of consumers' purchasing power other than wages, would enable production to proceed continually at a faster rate than wage payments. Too much reliance should not be placed on the

assumption, however, that consumers' purchasing power is being adequately strengthened from sources other than wage payments. We have set up an industrial system based on mass production and mass consumption. Wage and salary earners constitute the masses, and they must receive sufficient purchasing power to enable the goods produced under mass production methods to be consumed.

One often hears the argument put forth that although the purchasing power of factory workers is not keeping pace with production of goods, wages and salaries received in the service industries, trade, public utilities, etc., make up this deficiency. Those who put forth this argument often overlook the fact that these non-manufacturing industries are also creating services that have to be paid for out of consumers' purchasing power.

Carl Snyder's indexes of physical production, primary distribution, and distribution to consumer present further evidence of the fact that it is distribution to consumers that is the stabilizing factor in our economic system. Carl Snyder's indexes are in terms of physical units—not price units—and have been corrected for trend and seasonal. When these three indexes are plotted on the same chart, they present a very interesting picture. The distribution to consumer index, except for the present depression, shows relatively slight swings above and below the computed normal. The amplitude of the swings above and below the normal line shown by the primary distribution index is several times as great as the amplitude of the swings in the distribution to consumer index, and the amplitude of the fluctuations in the productive activity index is nearly twice as great as that in the primary distribution index.

In a period of prosperity production gets out of line with consumption. In a period of depression, the relative stability of consumption is one of the factors which eventually brings us out of it.

We often hear it said that it would be a good thing if all elements in our price system could be deflated in equal proportions and at the same time in a period of depression. What would happen if this could be brought about? The answer is that there would be nothing to check the progress of the depression. The unbalance and lack of adjustment which caused the depression would still be present at every stage of the deflation. This contention that all factors have to be deflated proportionally before recovery can take place is based on the tacit assumption that all factors in our economic system were inflated proportionally during the boom period. In deciding whether or not a given policy is a good one to follow in a depression, we have to consider whether or not that policy will tend to correct the maladjustment which brought

about the depression. If it be true that insufficient consumers' purchasing power is an important factor in bringing about a depression, any policy that tends to decrease consumers' purchasing power and hence consumption surely will not assist us out of the depression.

We are constantly talking of stability, but it will never be obtained by tying wage rates and retail prices to the wild gyrations of rates of profits and prices of producers goods. It was capital and profits that were most over-expanded in the boom period, and these should be deflated, not wages.

It is interesting to note that the indexes compiled by Carl Snyder reveal that distribution to consumers was relatively well maintained in the depression of 1920, and the depression was of relatively short duration. During the current depression, however, distribution to consumers has declined nearly as fast and nearly as much as has productive activity. An analysis of the Census of Manufacturers shows why this condition might well be expected. From 1899 to 1914, the value of manufactured product increased 112 per cent, the cost of materials, supplies, fuel, and power increased 118, wages increased 103, and overhead and profits increased 105. Thus, the relative importance of the components in the value of manufactured products showed little change from 1899 to 1914. From 1914 to 1921, the various components in the value of the manufactured product rose and fell by practically the same amount, so that even during the war years and in the post-war depression, the various factors in the production of manufactured goods received a practically unchanging proportion of the goods produced. From 1921 to 1929, however, the story is entirely different. During this period the value of product increased 57 per cent, the cost of materials, supplies, fuel and power 48, wages 37, and overhead and profits 96. Thus, from 1921 on, overhead and profits were becoming of greater relative importance and wages and materials were becoming of relatively less importance in the value of manufactured product. To me this rapid increase in overhead costs and profits coupled with decreasing material and labor costs has a direct connection with the fact that distribution to consumers has fallen off nearly as much in this depression as has productive activity.

The data which have been presented are obviously inadequate, but they do seem to warrant a tentative conclusion that we are suffering from a breakdown in markets, of which the domestic market is an important part, and that no boot-strap effort whereby we would seek to expand production at the expense of consumer purchasing power is likely to prove effective as a means of sound economic revival.

COMMERCIAL BANKING DURING THE DEPRESSION

By Walter E. Spahr

The theories according to which we have devised the structure and regulated banking practices certainly have not given adequate recognition to the point of view that commercial banking is in fact a quasi-public institution in a high degree. Instead, commercial banking has been looked upon as a legitimate profit-making business to which the doctrine of laissez-faire is assumed to apply in a marked degree rather than as an institution whose first and paramount obligation is to insure the absolute protection of the depositors' funds, whose second duty is to finance commercial enterprises in a manner that will contribute to the stabilization of general business, and whose last duty is to make large salaries and profits for the officers, directors, and stockholders. Under the aegis of such theories, we have permitted thousands of relatively small unit banks to spring up throughout the country in a manner that has provided us with a system which makes effective regulation extremely difficult. In addition, we have contributed to our present irrational and unsatisfactory commercial banking system by permitting it to be divided into both national and state banks out of deference to the states' rights doctrine; by assuming that great freedom in the organization of banks is appropriate; and by adhering to the naïve assumption that it is not imperative that there be established a strong and effective national system, subject to centralized national control and policies.

The type of banking practices in vogue and the results flowing from such a haphazard and unorganized system are exactly what should be expected. During periods of business expansion the banks, like all profit-making enterprises, expand and engage in various unsound practices at the very time when they should be exercising restraining influences over the commercial businesses which they should be financing according to proper principles. In other words, they go along with the tide and contribute to its rise and expansion rather than act as regulative agents constantly working to keep it within its proper channel. Our prevailing theories as to the functions of commercial banks and bankers not only permit but invite them to become an inseparable part of the business trend. As profit-making institutions, freely organized under authority of a great variety of regulatory laws, and relatively free from properly-conceived restraining influences, it is hardly logical to expect any other results.

Not only do our commercial banks function in a manner just the

opposite of what they should by depressing business during a period of business recession and by rushing in to appropriate their share of profits during a period of expansion, but the general theory and psychology of the American people in the past have enabled the American banker to surround himself with an aura marking him as the superprofit maker of all business. This is a subtle psychology underlying the glorified principles of "sound banking" and it drives the banker incessantly toward his goal—profits. At the same time it prevents the banker from developing any strong belief that the foundation stone of good banking consists not only in being able to protect the bank's depositors but also in being able to come to the support of commercial business at the proper time.

Because of the position banks have been permitted to occupy in our economic structure, we see them topple like a house of cards in times of a crash and at the very time when they should be a bulwark of strength and an aid to business. There have been years in our banking history, especially since 1922, when the average percentages of bank failures have exceeded the percentages of failures of commercial concerns; and there is no country in the world that can begin to rank with the United States in so far as bank failures are concerned. We hold the world's booby prize in this respect, and the disasters which have been experienced by depositors, borrowers, business, the government, and the mass of people generally defy calculation and bewilder the imagination.

Although it will be recognized that it is not possible to separate clearly the fundamental defects, and consequently the needed correctives of our banking structure as revealed in our bank failures from the causes of the unsound practices of the surviving banks, we are all interested in seeing just what our surviving commercial banks are doing and can do in a severe depression like this to alleviate conditions and to aid in putting the economic system back on its feet. Somewhat aside, therefore, from the conclusive evidence of the weaknesses of our banking structure as revealed in the phenomenal number and outstanding characteristics of our bank failures,[1] there is the question as to whether the banks which still exist, and have saved themselves or have been saved through aid extended by such agencies as the Federal reserve banks and the Reconstruction Finance Corporation, are really aiding business by passing on to the average business man some of the support which they, themselves, have received. It is

[1] The causes and cures for bank failures were discussed by the author in "Bank Failures in the United States," *The American Economic Review Supplement* (March, 1932), Vol. XXII, No. 1, pp. 208–238.

not possible in all cases to produce quantitative data in answer to this question. There is available, however, sufficient evidence of a more or less general sort which will justify drawing the conclusion, with a reasonable degree of accuracy, that our commercial banks do not aid business recovery or in alleviating existing conditions as much as all of them should or many of them could.

One bit of concrete evidence supporting this conclusion is found in the relative rigidity of the interest or discount rate which banks charge their customers for loans. In a very real sense, this rate is one of our most outstanding customary prices. Every typical borrower knows that if he attempts to borrow from his bank in these times of depression it is highly probable that he will be charged the customary 6 per cent. Certain large borrowers secure favors without doubt, but the smaller ones probably do not. There is a widespread belief that, for most borrowers at most banks, there is practically no response between rediscount rates at the Federal reserve banks and bank-customer rates. If this belief be well-founded, this rigidity in bank-customer rates means that during periods of rising prices there is a relative relaxation of restraint on the borrower, and during the recession and depression there is an undue pressure exerted over him. Logic, of course, would suggest that the nature of the pressure should be reversed.

On the basis of weighted index numbers of the bank-customer rates as reported to the Federal Reserve Board by banks in 36 principal cities, one perceives some rigidity in these rates, but perhaps not as much as the general public would expect to find. For example, one finds that when the crash came in the stock market in October, 1929, the Federal Reserve Bank of New York had a rediscount rate of 6 per cent, and all other reserve banks had a rate of 5 per cent, the average (mean) rate being approximately 5.1 per cent. The bank-customer rate for the same month as reported from 36 cities was 6.21 per cent. When the New York rediscount rate reached its lowest level of 1½ per cent on May 8, 1931, with a 2 per cent rate at the Boston Reserve Bank, and a rate of 3½ per cent at all other reserve banks, giving an average (mean) rate of 3.2 per cent for all reserve banks, the mean bank-customer rate in these 36 centers was 4.64 per cent. Stated in another way, the average bank-customer rate in these centers during October, 1929, was 23 per cent above the average of the rediscount rates, and in May, 1931, it was 50 per cent above. In other words, the average of the rediscount rates fell almost 40 per cent during this period whereas the bank-customer rate declined only 26 per cent. In New York City the rediscount rate dropped 75 per cent during this period while the bank-customer rate declined only 30 per cent.

Although these indexes do not represent adequately the degree of rigidity which actually exists in our bank-customer rates, since they show the rates charged on the majority of funds loaned rather than the rates charged the majority of customers, they afford considerable support to the contention that, during periods of recession and depression, commercial banks put excessive pressure on borrowers; that they do not pass on to their borrowers the benefits of the lower rates which they, themselves, receive; that in so far as these banks rediscount, they tend to pocket the profit which results from the discrepancies between the bank-customer and rediscount rates; and that these banks have not accepted the point of view that it is their duty to encourage business in every way possible during a recession by lowering their discount rates at least in proportion to the drop in the rediscount rates.

There are three undesirable results which flow from this tendency to maintain a customary interest rate. One is that it tends to depress business during a recession; another is that during times of business expansion it does not serve as a sufficient brake on the expansion; and the third is that it tends to impair the effectiveness of change in the rediscount rates.

Another practice of our commercial banks which has an unwholesome influence on business conditions during both an expansion and a recession is seen in their excessive efforts to keep out of debt to the Federal reserve banks. Various writers have more or less implied that this traditional American practice has in it some virtue. Such a practice is unquestionably more deplorable than virtuous. When rediscount rates are high or rising, member banks try to keep out of debt rather than raise the discount and interest rates on their customers. The result is a tendency to shut off loans abruptly. This fact, combined with the encouragement to borrowers resulting from lagging bank-customer rates, helps to precipitate a sharp liquidation that should be avoided. It would be preferable if these banks continued to borrow at these high rates and passed on to their customers even higher rates. This would act as a brake upon borrowers and would provide a means of avoiding abrupt liquidation in business. The converse should be the practice in times of recession and depression. When banks refuse to make legitimate loans during such times in order to keep out of debt to the reserve banks, they are engaging in bad banking practice in so far as the accommodation of legitimate business is concerned.

Still another indication that commercial banks are not doing all they should do in times of a business depression like this is seen in the extreme liquidity of the portfolios of many of our banks. This liquidity has reached the stage of a scandal in many instances. It was reported not

many weeks ago that the liquidity of 15 of New York City's banks, as of September 30, 1932, averaged 58 per cent, this liquidity being based upon the ratio of cash and United States government securities to total deposits.[1] Two of these banks had a liquidity of 70 per cent and three others 67 per cent or above. If one were to add certain other items, such as bankers' acceptances, to those used in measuring liquidity—and undoubtedly many persons would be disposed to set up other measures of liquidity—the percentages would be still higher. Mr. Atlee Pomerene, chairman of the Reconstruction Finance Corporation, in an address on November 17, is reported to have said, regarding those banks which boast that they are 75 per cent liquid and which he considered parasites on the community and deserving of the condemnation of every thinking man and woman, that "Were it not for the Reconstruction Finance Corporation the entire country would be at their mercy." He estimated that 10 per cent of the banks were maintaining an excessive liquidity and that they could function and could aid in the restoration of normal business conditions if they would perform their proper functions. For all member banks of the country, the consolidated statements will reveal a relative increase in their liquidity, but to a much less extent than is revealed by some of our banks. If we compare the ratio of cash in vault and United States government securities to demand and time deposits on October 4, 1929, with that of June 30, 1932, we find this measure of liquidity increased from 14 to 26 per cent. Stated in another way, the ratio of loans to demand and time deposits on October 4, 1929, was 84 per cent and on June 30, 1932, it had declined to 70 per cent.

Just how many legitimate loans are refused cannot be determined because of lack of evidence. Much general information is available, however, to the effect that commercial banks have been refusing loans in a wholesale manner to businesses and individuals that have legitimate claims to commercial bank credit. It would be a great gain for everyone if such evidence regarding bankers' refusals to extend loans were gathered by the Federal Reserve Board, since it would serve as something of a protection to borrowers, a check upon arbitrary bankers, and would give the central banking authorities a more complete picture of the true situation. As things stand, only part of the picture may be seen.

In fairness to many of our far-sighted and enlightened bankers—and this includes many small bankers—it must be pointed out that many of them have resisted this tendency toward excessive liquidity to the limit of their capacity; and if they have contributed to it at all, it has been only because they could resist no longer the pressure from the Comp-

[1] A *Memorandum* issued by Hornblower and Weeks (New York, October 19, 1932).

troller's office or the office of the State Superintendent of Banking. Confining ourselves to the principal issues under consideration it would appear that reforms must be along the following lines:

1. Commercial banking must be accepted as a business affected with a public interest to a greater extent than we have recognized thus far if we are really determined to have a banking structure that will fulfill properly the demands made upon it by our economic system. We should recognize the fact that we have no legitimate grounds on which to expect that commercial banking will be run with the disinterestedness now being demanded if, at the same time, we assume that the profit motive is properly the fundamental one in its operation. If we insist upon a different type of banking and banking practices on the part of the commercial banker, we must be aware of the fact that we are setting up a radically different concept as to the fundamental function of the commercial banker from that which has prevailed hitherto. We have not always been quite consistent in our position when we have condemned the commercial banker for what has happened in times like these while at the same time he has been permitted to run his institution on a profit-making basis. The banker has given us just what we should expect under such a system, and if we continue it we have little ground on which to expect anything else if we are to make any pretense of consistency in our reasoning regarding the matter. Therefore, if we are determined to have a different and proper type of commercial banking, the profit motive must be relegated to a secondary position, and all regulations must be made with this fact in mind. The idea of relegating profit-making to a secondary position is not new in banking. We have embodied this principle in the Federal Reserve System, and can extend it easily to the member banks by devising regulations designed to bring about a greater control and stabilization of business with profits a secondary consideration.

2. All commercial banks should be brought into the national system, minimum capital requirements should be raised, and branch banking should be permitted where necessary to provide local banking facilities. In this manner, a strong banking system, guided by national authorities in the interests of the nation's welfare, can be developed. The nationalization of state commercial banks involves the acceptance of the fact that commercial banking is interstate in nature, which it is. It involves, also, the development of national policies with respect to the manner in which the national and Federal reserve banks should function. One may fairly raise the question as to whether the position taken by those who favor the continuation of our dual system of commercial banking is not indicative of a reluctance to face the fundamental issues which

are most certainly involved, and whether it does not constitute a tacit assumption that obvious facts can teach no lessons which we are bound to respect. When these lessons become as painfully clear as those revealed in our bank failures, arguments advanced in behalf of the status quo do nothing more or less than ask for a perpetuation of the fundamental defects on our banking structure and the consequent disasters resulting from its method of functioning. The time has surely come for facing these problems squarely and for combating any drifting policy.

3. Policies and plans should be established to insure that commercial banks will not be permitted to expand themselves or aid in expanding business when it is beginning to reach beyond the stage of full recovery. In a similar manner, commercial banking practices should be adjusted in a rational manner to the needs of business if and when a recession begins. Certain very definite steps can be taken in this direction: (a) Bank-customer rates should be made to follow the rise and fall of the rediscount rates. There is nothing radically new in this proposal since we apply the principle in a general way in our Federal Farm Loan System and in our Federal Intermediate Credit System. The principle has also been applied in Germany. (b) Principles to guide member banks in their extension or refusal of credit to the various industries and businesses should be worked out by the Federal reserve banks, and member banks should be required to adhere to them. In the event that an application for a loan is rejected, a report should be sent by the member bank to the reserve bank and another by the customer whose application is rejected. (c) During periods of rising prices, the margin of safety, as evidenced by borrowers' statements and collateral, should be increased progressively at the direction of the Federal reserve banks so that in times of recession this margin will be adequate to protect the member banks, thus making it unnecessary for them to call for additional collateral security or put increased pressure upon borrowers. During the depression, the margin required should be lowered.

If these suggestions were translated into laws and regulations, the profit-making motive in commercial banking would be relegated to its proper position in our economic system and we would establish a more rational relationship between the banks and other forms of commercial enterprise. The time has arrived for us to adjust our thinking as quickly as possible to this view regarding the proper place of commercial banks in our economic system and to the view that in no place is increased control more needed or more desirable than in commercial banking because of the unique position occupied by that institution in our economic system. Circumstances have carried us far beyond the

old laissez-faire doctrines to which many bankers still cling so tenaciously, and they probably will be compelled to accept the changed attitude toward the regulation of banking despite their widespread disapproval of it.

DISCUSSION

By Fred Rogers Fairchild

Professor Spahr has presented a severe indictment of the American banking system, the banks, and the bankers. He charges that the bankers give too much thought to profits and too little regard to the public interest which they ought to serve. There is too much decentralization in the banking system. The double system of national and state banks is wrong. The banks impose too little restraint upon the business world in time of expansion and offer too little aid and encouragement in time of depression. The banks are too little inclined to borrow from the federal reserve banks. At the present moment too many banks—perhaps ten per cent of them—are demonstrating, by a high degree of liquidity, that regard for their own safety stands above any consideration of service to the business community.

Thus summarized, the indictment will, I think, appeal to most of us as generally sound, or at the least containing much of truth. Some of the items in the charge are self-evident. As to the others our judgment is probably a bit vague, based perhaps on general information or "hunch" rather than on positive evidence. My chief criticism of this section of Professor Spahr's interesting paper is that he does not seem to get us much beyond where we already were. He is frank to admit lack of definite evidence and his reliance on general—and in some cases I should say quite inconclusive—information in support of many of his charges. At a session of the American Statistical Association I think something a bit more quantitative was fairly to have been expected.

I get the impression also that, in the absence of sufficient evidence, Professor Spahr is not justified in so sweeping an indictment against the whole banking fraternity, without distinguishing the innocent from the guilty. It is to be hoped that he may some time make his bill of indictment a bit more specific and discriminatory.

In coming to consideration of proposals for reform, I should state that I make no pretension to being an authority on banking. My observations are made from the viewpoint of the general economist. Professor Spahr suggests first that the profit motive should be relegated to a subordinate position and submits that this can be easily accomplished. I wish he had told us how in more detail.

Next Professor Spahr would nationalize all banks, permit more branch banking, and raise the minimum capital requirements. Probably all would agree with the third proposal. The first two are certainly subject to question and honest difference of opinion, and I do not see that Professor Spahr has presented sufficient fact or argument to settle the question. As to all three propositions, there is lack of definite specification. How far should branch banking be permitted? Within the county, within the state, or without limit on a nation wide basis, as in Canada? And are county or state limitations consistent with a system in which all banks are national institutions? What should be the minimum capital requirement? Obviously the answer to this question bears close relation to the degree of branch banking that is to be permitted.

A third group of reforms centers about the object of making the banks adjust themselves more soundly to the fluctuations of expansion and depression. Discount rates of the individual banks should be compelled to follow closely the rediscount rates of the federal reserve banks. This implies great faith in the federal reserve system, and I wonder if its adoption should not wait at least until we arrive at some closer agreement as to what should be the policy of the federal reserve banks. I seem to recall some little criticism directed against the manner in which the federal reserve banks have conducted themselves during the recent periods of expansion and depression.

I confess to no little misgiving as to the proposal that the federal reserve banks should pass upon the action of individual banks in rejecting applications for loans. And, while we can all probably agree that a wider margin of safety for loans during periods of expansion and some relaxation in times of depression would be a sound policy, I do not find that the manner of imposing such policy upon the banks has been made sufficiently clear. I can see room for some control, by the Comptroller of the Currency or the federal reserve banks, in restraint of what may be called "unsound banking practices." Beyond this, how is the matter to be handled without breaking the necessary link between risk and responsibility and opening the door to personal and political influence?

I do not draw quite the same inference as does Professor Spahr from the fact that "the spirit of control is in the air." Instead of finding warrant for hasty measures of banking control, I would take warning against the present danger of being stampeded into action not based on adequate knowledge and deliberate counsel.

CALCULATION OF RELIEF EXPENDITURES

By Charles E. Persons

An important function of any paper relating to unemployment matters in the United States on such an occasion as this is to point out the inadequacy and the unreliable character of the data available for our calculations. Let me discharge this duty at the outset by declaring that available reports on relief expenditures are fragmentary, generally incomparable and always incomplete. We owe a large debt of gratitude to the agencies which have tackled the problem of supplying such data courageously, even adventurously, and have injected a measure of certainty where all was uncertainty in previous periods of depression. Our largest debt is to the Department of Statistics of the Russell Sage Foundation which, with splendid prescience of the need impending, inaugurated at the beginning of 1929 the collection and study of current relief statistics. The Foundation intended to "demonstrate to social agencies and to the public the utility of prompt collection, careful analysis and timely publication of these data." Their purpose was successfully achieved. So obviously valuable were their monthly publications that the United States Children's Bureau urgently requested the transfer of the work to them, which was done at the beginning of 1932.

As developed by the Foundation these monthly bulletins collected data of pension work and direct relief dispensed by both public and private agencies to families in their homes. Eighty-one cities were covered, most of them with over 100,000 population. The Children's Bureau amalgamated these statistics on relief with those on relief and transient care collected by their agents since September, 1930. The combined reports cover at the maximum 136 cities; 88 with more than 100,000 population and 48 in the 50 to 100 thousand population class. Every important industrial city in the United States is included and the geographical spread is wide. In February, 1932, the reports came from 976 agencies or divisions of public departments in 123 cities with an aggregate population of over 38 million, 55 per cent of the total urban population. Anyone who has attempted to get regular returns for such a large and widely distributed group will be prepared to understand that the monthly bulletins if they are to appear promptly, must be content to publish incomplete data. Monthly comparisons of totals are thus somewhat inaccurate and comparisons of monthly returns for cities are doubtful until the accounts are completed. Totals thus fluctuate in

baffling fashion and complete dependence inheres only in the final annual totals. It is ungrateful to criticize such a valuable enterprise, but one regrets the failure to carry out the promise to publish quarterly compilation containing the complete and final totals. These monthly relief bulletins thus constitute a continuous series from January, 1929, to September, 1932, inclusive. The basis was enlarged in 1932 and no explanation is at hand regarding the adjustment of the later to the earlier data. There has been continual enlargement of the list of agencies and of the activities covered probably with a parallel development in the relief expenditures omitted as deepening depression and increasing unemployment made heavier demands on the friends and relatives of unfortunate workers. Whatever the deficiencies, the series is our sole dependence for evidence of the trend of relief expenditures during the last four years. It shows that such expenditures were 42 million in 1929; 70 million in 1930; 167 million in 1931 (partially estimated); and approximately 275 million in 1932, on the assumption that the last three months of this year will show the same proportion of relief expenditures as did the similar period in 1931.

As a supplement to these monthly data we have the Census Bureau Special Report on Relief Expenditures by Governmental and Private Organizations during the first three months of 1929 and of 1931. Its prime virtue is its extensive character. For, starting with the information assembled by the Sage Foundation and by the Children's Bureau, the census officials gathered further material until they had returns covering these three months in both 1929 and 1931 from every city with over 100,000 population, from every city but one in the 30,000 to 100,000 classification; from 4,863 of 5,938 incorporated places with from 1,000 to 30,000 inhabitants, and from 6,353 smaller incorporated places. All told these urban areas included 57.4 per cent of the total population of the United States. In addition county areas were canvassed which contained 34.2 per cent of our population. The reports thus covered areas in which resided 91.6 per cent of our population. It was intended that the data should include "actual relief expenditures plus cost of administration" but many agencies were unable to report beyond the amount of relief granted. How far short the totals compiled fell of the full relief expenditure can only be surmised. Here as everywhere in this subject the single certainty is that the reported totals are below the actual costs—usually much below for even in these cynical post war days "charity vaunteth not itself." The Census Bureau reported for the area included total expenditures by "public and private organized agencies for family relief (outside of institution) and for relief of homeless men" amounting to 22⅓ millions in the

first three months of 1929 and to 73¾ millions for the corresponding period of 1931. In the opinion of the Bureau the increase of nearly 51½ millions "may fairly be attributed to the unemployment caused by the business depression."

Combining these cross sections of relief expenditures in the first quarter of 1929 and of 1931 with the longitudinal section of relief expenditures by our largest cities through the last four years enables us to calculate relief expenditures in the United States during 1929 to 1932, inclusive. Some assistance may be derived from a Children's Bureau report on the cost of Family Relief in 100 cities, 1929 and 1930. The cities included were reported as having spent nearly 21 millions in caring for families through public and private agencies in 1929 and more than 40 millions in 1930. The percentage of increase was 89. In these 100 cities the funds dispensed in the first quarter of 1929 were 27.4 per cent of the total for the year; in 1930 the first three months accounted for nearly 26 per cent. Similarly the expenditures reported by the Sage Foundation for January, February, and March of 1931 were 27.2 per cent of the total for the year. Extending the Census Bureau totals to 12 months on the basis of 27 per cent expenditures in the first quarter gives us in round numbers 83 million dollars relief expenditures in 1929 and 272 million dollars in 1931. Of these totals the Sage Foundation reports included 51 per cent in 1929 and 62 per cent in 1931. Applying the 51 per cent basis to the Foundation total for 1929 and for 1930 gives 83 and 138 millions respectively as the total relief expenditures for those years. In like manner supposing 62 per cent reporting in 1931 and 1932 gives 267 millions and 443½ million as the total cost of relief in the last two years.

It will be remembered that the Census Bureau failed to cover the final 8 per cent of the total population. There were known deficiencies in the reporting also in the omission of costs of administration and in the quoted spending of $1,735,489 by the American Red Cross "during the first three months of 1931, either in excess of the reports received from localities or in localities not covered by the report." Since 1929 was a prosperous year at least in the first nine months and the omitted areas were predominantly rural we are probably justified in adding no more than two million to the total of that year for the unreported areas. The census report states that 377 counties out of 1,716 covered, nearly 22 per cent, reported "no relief expenditures by the county government." Considering the great expansion of relief work in following years and the setting up of many new organizations, some of temporary significance and all difficult of listing and enlisting in the reporting of relief expenditures, it seems fair to add 10 per cent in each of the three

following years to cover incomplete reporting. Rounding the figures is also desirable as an indication of their "calculated" character. Results reached by the two methods are not materially different in 1928 and stand at 83 million dollars. In 1931 we have $271,700,000 and $267,300,000 or remembering that all results are incomplete 270 millions as an acceptable compromise. This gives us total relief expenditures of

$ 85 million in 1929
150 million in 1930
300 million in 1931
500 million in 1932

Some corroboration is found for these calculations by comparing similar computation based on the Children's Bureau's 100 cities reports. Thus in these cities the total relief expenditures for the first quarter of 1929 were $5,723,000 or 25.6 per cent of the $22,338,000 included in the Census Bureau's comprehensive investigation. This percentage applied to the total relief expenditure for the 100 cities gives 81 6/10 millions comparable to 83 millions in our first calculation. Similar calculations for 1930 give 154 millions to compare with 138 millions. This was raised to 150 millions in our adjusted calculation.

A word may be added concerning the large appropriation made in 1931 and 1932 from state funds for relief purposes. Not all of these find place in the monthly reports since these are confined to public and private agencies in cities. Only such part of these state funds as is dispensed in aid of municipal treasuries would be included. Many state projects for work relief are administered directly by state officials. The census report was too early to be much affected by these expenditures. Such provision of state funds for use in 1931 and following years so far as records have come to hand are:

New York.....	$20,000,000	Increased income tax 50 per cent, approved September 25, 1931
	5,000,000	Supplemental, approved March 31, 1932
	30,000,000	Authorized in November, 1932, election referendum
	$55,000,000	
New Jersey.....	$6,500,000	From sale of Camden-Philadelphia bridge
	1,500,000	From State Treasury
	1,616,033	From State Highway Fund, approved October 13, 1931
	20,000,000	Approved in November, 1932, election referendum
	$29,616,033	

Rhode Island...	$1,500,000	State funds to be loaned cities
	1,000,000	From General Highway fund to loan cities, approved April 15, 1932
	$2,500,000	
Illinois.....	$20,000,000	Tax anticipation notes refunded into bonds authorized in November, 1932, election referendum. To be ultimately paid from proceeds of general property tax and motor fuel tax, approved 1932
Wisconsin.....	$6,000,000	Estimated yield of doubling income taxes for one year and of emergency chain store license tax for 2 years, approved in 1931
Ohio.....	$20,000,000	Diversion of gasoline and motor vehicle license tax
	11,750,000	Special utility tax of 1 per cent of gross receipts for five years
	6,000,000	Estimated proceeds of local bonds *
	$37,750,000	
Pennsylvania...	$10,000,000	State funds allocated to local subdivisions handling emergency relief in 1931
Oklahoma.....	$700,000	Increased gasoline tax in 1931
Massachusetts..	$3,466,144	Various work relief measures
	7,000,000	For highway building
	1,500,000	For a public building
	5,000,000	Apportioned among cities, towns and counties for road work, approved in 1931
	$16,966,144	

SUMMARY

New York.....	$55,000,000
New Jersey.....	29,616,033
Rhode Island.....	2,500,000
Illinois.....	20,000,000
Wisconsin.....	6,000,000
Ohio.....	37,750,000
Pennsylvania.....	10,000,000
Oklahoma.....	700,000
Massachusetts.....	16,966,144
	$178,532,177

* At the maximum these local bonds might produce $16,660,000. This total is reduced by consideration of debt limits and of the saleability of such local bonds. Their sale is to be supported by purchases from money in the possession of the state in Workmen's Compensation, Teachers' Retirement and Highway funds.

It would seem conservative in our procedure of increasing to the nearest round number on the basis of incomplete data to put this general total at 200 million dollars. To what extent this sum should be regarded as an addition to the table reached in our calculation of relief expenditures by cities and other local subdivisions cannot now be determined because we are not certain how these funds will ultimately be distributed. In some cases, as in the Ohio five year special tax levied on utilities, the end of the depression may cause part of the levy to be remitted. Whatever the uncertainties on these scores the facts adduced allow of no uncertainty in the conclusion that our state administrations have been driven to support local relief expenditures on a large scale.

Similar significance attaches to the hitherto unprecedented Federal measures. The Federal Unemployment Relief Law became effective July 21, 1932. It provided over 322 million dollars for the emergency construction of public works; it authorized the Reconstruction Finance Corporation to loan the grandiose sum of a billion and a half dollars in financing self-liquidating public and private construction projects and the financing of agriculture through credit corporations; and it authorized the same agency to loan a maximum of 300 million dollars to be used in the states for the relief of people in need due to unemployment. State governors are made responsible agents and in applying for funds must certify to the necessity for funds and that the resources of the state are inadequate for relief needs. The last available reports show nearly 77 million dollars so lent through November 30, 1932, to 33 states and 2 territories. The implication will not be overlooked that in over two-thirds of our states their own resources are "inadequate for relief needs." The most considerable borrowers have been:

Wisconsin	$3,000,000
Michigan	5,185,000
Ohio	6,494,000
Pennsylvania	11,304,000
Illinois	25,240,000

These funds presumably will for the most part be distributed to local relief agencies and find their place in the accounting by municipalities and counties. In Wisconsin and Illinois the sums borrowed pass through the same channels as did the funds provided through state legislation. In other states they are handled through the governor's office and are in addition to our calculation.

This is true also of the value of government owned wheat and cotton dispensed in the form of flour and garments through the agency of the Red Cross, since the Children's Bureau directed that agency to with-

hold this form of relief for separate reporting. By the end of October over 50 million bushels of wheat had been promised to local chapters and over 234,000 bales of cotton. Here are further problems in the calculation of relief expenditures. Shall the wheat and cotton be valued at their cost to the Farm Board from the point of view of relief to the farmers? Or at current value as relief to consumers? How do we calculate the additional cost of milling flour, spinning and weaving cloth and fashioning garments? What of transportation and distributing costs?

Finally there are relief expenditures for the lodging and feeding of transient men not included in the general accounting which is for family relief. The Children's Bureau added this reporting on taking over the monthly bulletin. Over 940,000 meals were served during September of 1932 and over 933,000 in August. This was nearly a 100 per cent rise from the same months of 1931 when 473,000 and 415,000 respectively were served. In these months this year 319,000 and 290,000 nights lodgings were given as compared with 178,000 and 157,000 last year. At the highest point in January, February and March, 1932, approximately 1,500,000 meals were served and 500,000 nights lodging furnished in each month. This for March represents a rise of the index of meals served from 100 in 1929 to 571 in 1932; of lodgings from 100 to 360. Calculating the cost of these services is a task which will not be attempted in this brief paper. We are content with the general showing made that our costs of unemployment are great and rapidly increasing. They also are inescapable. The increasing urgency of want and destitution has routed our relief forces from the first defense line constituted by reliance on private savings, and private charity supplemented by local public agencies. It has broken through the second line reconstituted by financial bulwarks provided from state treasuries. In certain states, of which Illinois is first to be mentioned, the leaders of the relief forces can already see the failure foreshadowed of the private, local, state and federal funds so far made available. Our performance to date has been generous beyond all precedents. Our relief expenditures have reached magnificent and staggering totals. Yet our success in meeting the emergency of unemployment need is not great. Our choice is between the haphazard, character destroying American dole system of charitable relief and the systematic organization of unemployment reserves or insurance funds as a bulwark to the self respect of our workers and of our nation.

THE EFFECT OF THE DEPRESSION ON MULTIPLANT MANUFACTURING ORGANIZATIONS

By Tracy E. Thompson

Size of manufacturing organizations has at least two aspects, one, the magnitude of the individual manufacturing units or plants, and the other, the extent of operating combinations composed of two or more such establishments. Since the middle of the last century the Bureau of the Census has been publishing figures from which fairly definite knowledge of the changes in size of establishments may be obtained.

The second classification, that one which has to do with the nature and extent of multiplant groups, is made by the Bureau primarily to facilitate its canvass of manufacturing establishments. The assemblage of records covering these industrial combinations grew out of the necessity of obtaining census returns from the principal offices of those multiplant organizations in which the subsidiary manufacturing units were not authorized to furnish data called for by the census.

No separate compilation of data for those manufacturing plants which were members of multiplant groups found its way into the regularly published reports of the Bureau prior to the census for 1929. These data, however, were used by Mr. Willard Thorp in the preparation of the census monograph entitled *Integration of Industrial Operation*, published in 1924, which dealt with the nature and scope of multiplant manufacturing combinations. Volume I of the reports of the census of manufactures for 1929 will present for the first time in the section on character of ownership general statistics, by industries, classified by multiplant and single-plant concerns.

The Thorp monograph disclosed the existence in 1919 of 5,838 multiplant combinations which controlled at least 8 per cent of all manufacturing establishments, in which more than one-third of all wage earners engaged in manufacturing industry were employed. These establishments produced, it was estimated, about one-third of the total manufactured output. Approximately five-eighths of the multiplant groups were simple combinations, each in control of factories all of which were found in a single industry, while the remainder operated vertically integrated plants and other more complex types.

The multiplant records at that time were somewhat incomplete because of the fact that a good many manufacturing establishments which were members of these groups reported direct to the Census Bureau, so that no central-office records were needed for these companies. By 1929

the census records covering these multiplant combinations were more comprehensive than a decade earlier. Although it is impossible to determine how much of the growth recorded for the multiplant groups between 1919 and 1929 is attributable to increased census coverage of these groups *as such* and how much to actual industrial integration, it is virtually certain that they did undergo a notable increase both in number and in size. At the census for 1929 data were collected from 8,246 multiplant combinations controlling 26,286 manufacturing establishments, or 12.5 per cent of the total number. The number of plants per group ranged from two to approximately 400.[1] These multiplant concerns employed four and one-quarter million wage earners, or 48 per cent of all those employed in manufactures in 1929, and turned out 54 per cent of the gross manufactured product. The average multiplant establishment employed 163 wage earners, as compared with 25 in the average independent establishment.

Very soon after their organization, numbers of these new multiplant companies were given a test of their ability to withstand depression—to demonstrate to what extent they were fair-weather combinations.

The argument is sometimes advanced that large manufacturing organizations have been able to weather adverse business conditions better than have the smaller, independent establishments because of the accumulation of comparatively large liquid surpluses during prosperous years, and also because of more ample access to bank credit, better organization of sales forces, and wider popularity of products. The factors favorable to the smaller, independent manufacturer are said to be a marked degree of flexibility and adaptability, maintenance of volume by the ability to accept orders unprofitable to larger enterprises, and fixed expenses held to a relative minimum.

It may seem that a comparison of the multiplant combinations with the independents is not entirely fair because the first group is in a sense a selected one, whereas the independent concerns form a heterogeneous group, comprising both strong, well-managed plants, and marginal, poorly directed ones.

This distinction should not be pushed too far, however, for two reasons. In the first place, during the prosperous years prior to 1930 some of the multiplant integration consisted in merging strong and weak units. To be sure, the large organizations dismantled some of their less efficient plants, but, nevertheless, it is believed that the multiplant group as a whole has been saddled with many second-rate establishments which were continued in operation through 1931.

[1] There are, as a matter of fact, some single-plant, so-called central-office groups, in which the principal administrative office is located away from the plant, but the number and size of such groups are not sufficient to distort the figures for the bona fide plural-unit groups.

On the other hand, a weeding-out process has been in effect among the independent plants, tending to preserve the stronger units. Inefficient ones dropped out in great numbers prior to 1932. The number of single-plant concerns in the 30 industries for which figures are given in Table I were about 14 per cent fewer in 1931 than in 1929.

TABLE I

COMPARATIVE AVERAGES FOR ESTABLISHMENTS IN 30 MANUFACTURING INDUSTRIES,* CLASSIFIED AS MULTIPLANT AND SINGLE PLANT: 1931 AND 1929

	Multiplant concerns		Single-plant concerns	
	1931	1929	1931	1929
Wage earners per establishment	289	375	47	68
Wages per establishment	$335,637	$532,270	$49,666	$92,841
Value of products per establishment	$2,950,328	$4,874,146	$292,500	$635,597
Wages to value of products—per cent	11.4	10.9	17.0	14.6

* The group comprises the following 30 industries:
Aluminum manufactures
Boots and shoes, other than rubber
Carpets and rugs, wool, other than rag
Caskets, coffins, burial cases, and other morticians' goods
Cast-iron pipe and fittings
Corsets and allied garments
Engines, turbines, tractors, water wheels, and windmills
Engraving, steel and copperplate, and plate printing
Envelopes
Fertilizers
Hardware not elsewhere classified
Leather: Tanned, curried, and finished
Machine tools
Meat packing, wholesale
Motor-vehicle bodies and motor-vehicle parts
Motor-vehicles, not including motorcycles
Optical goods
Paints and varnishes
Petroleum refining
Plumbers' supplies, not including pipe or vitreous-china sanitary ware
Pumps (hand and power) and pumping equipment
Rubber tires and inner tubes
Shirts
Soap
Stamped ware, enameled ware, and metal stampings; enameling, japanning, and lacquering
Sugar refining, cane
Textile machinery and parts
Tin cans and other tinware, not elsewhere classified
Wire, drawn from purchased bars or rods
Wirework not elsewhere classified

The conclusions about to be presented do not cover enough industries to be final. They are based on returns at the census for 1931 for 11,670 manufacturing plants in 30 industries (Table I). The data for these plants were compared with those covering the same industries for 1929. These 30 industries employed 1,190,000 wage earners in 1931, probably about 20 per cent of the total number which the completed tabulations will show to have been employed in all manufacturing industries in that year. The group is fairly evenly divided as between wage earners in multiplant and in independent establishments. The industries represent 14 of the 16 major industry groups recognized by the Bureau of

the Census. Although they were selected because tabulations for them were available at the time this report was prepared, whereas those for numerous other industries were not, they are thought to be representative of the whole field of industry.

Now for a comparison of the relative activity of the multiplant and independent manufacturing organizations in 1931 and in 1929. In the first place, the wages paid by the multiplant group dropped about 30 per cent in 1931 from the 1929 level, while those for the independents as a group declined almost 54 per cent, the two combined having decreased 45 per cent. This is 5 per cent more than the drop in the Federal Reserve Board's factory-payroll index for the same period. The gross factory value of products of the multiplant organizations dropped 33 per cent, that of the independents 60 per cent.

Since neither all the establishments of the multiplant groups nor all those of the independents are exactly identical for the two years, comparisons on a per-establishment basis are fairer than those made in the preceding paragraph. Wages paid per establishment by the multiplant organizations declined about 37 per cent, by the independents about 47 per cent. Value of products per establishment for the multiplant organizations dropped 39 per cent, for the independent organizations 54 per cent. It is quite evident that wage budgets and value of output were maintained closer to 1929 levels in the multiplant than in the independent organizations. As to the maintenance of *rates* of wages in the two groups, census data do not furnish a basis for a precise or even a fair comparison.

Of significance, however, is the ratio of wages paid to factory value of products. The average multiplant establishment is much larger than the average independent plant and the former is undoubtedly in general the more highly mechanized. For this reason the wage cost per unit of output generally would be less in the large, mechanized plant than in the small one in which a larger proportion of the work is done by hand. Census data indicate that among the multiplant concerns wages were 10.9 per cent of value of products in 1929 and 11.4 per cent in 1931, a comparatively slight difference. The independent plants, on the other hand, paid out 14.6 cents of their product dollar in 1929 in wages and 17 cents of it for that purpose in 1931.

The figures seem to indicate that the multiplant combinations adjusted their wage budgets to balance declining production more readily than did the single-unit plants. It is probable, however, that the salary budget was proportionately greater for the combinations than for the independents, for it is likely that more so-called "productive" labor of the sort performed by persons classified as salaried employees,

as well as more strictly clerical work, is required per unit of output in the large, multiplant groups than in the smaller, single-unit concerns. (The salary data were not tabulated separately.)

A somewhat arbitrary classification of the 30 industries was made on the basis of their manufacture of producer or consumer goods. Among half of these industries the manufacture of producer goods predominates; among the remaining half, that of consumer goods. The results indicate a considerably greater decrease per establishment in wages and products among the producer-goods industries than among those making consumer goods. In total wage payments, the consumer-goods industries dropped 29 per cent, producer-goods industries 40 per cent; in value of output, the consumer-goods industries declined 37 per cent, the producer-goods industries 61 per cent. As to the relative decline among multiplant concerns and single-unit plants in the two fields of production, the results do not modify the general conclusion stated above, namely, that the multiunit plants as a group unquestionably maintained operations on a relatively higher level than did independents. In fact, if all multiplant companies increased their share of the total 1931 production in the same proportion as did those in the 30 selected industries, then such industrial combinations turned out in that year about 60 per cent of the entire manufactured product, as compared with an estimated 33 per cent in 1919.

As a check on the probable representativeness of the foregoing figures for multiplant concerns, data for 1931 and for 1929 were tabulated for approximately identical plants in 58 of the largest 200 multiplant companies. It was found to be impossible, because of lack of time, to complete the tabulations planned for all the 200 companies. The 58 companies were not selected because they control plants classified in one or more of the 30 industries referred to above, although some of them, as a matter of fact, are engaged in one or more of those industries.

Striking similarities in the percentages of decrease from 1929 to 1931 are found in the two independent multiplant tabulations. Wages paid per establishment among the multiplant establishments of the 30 industries fell off 37 per cent, among the 58 companies 36 per cent; value of output per multiplant unit of the 30 industries declined 39 per cent, of the 58 companies 40 per cent. Somewhat greater differences were found in the proportions of wage payments and of value of products, the percentage hovering close to 11 for the multiplant groups in the 30 industries and increasing from 11.9 in 1929 to 12.6 in 1931 for the 58 companies, but failing by a good margin to equal the corresponding percentages for single-unit plants (Table I).

There seems to be a rather widespread conviction that the large

industrial concerns reduce their labor forces to meet slackening demands for their products more uncompromisingly than do the smaller companies. Whether the large organizations rigidly adjusted wage budgets to sales between 1929 and 1931 is not disclosed by census data; nevertheless, the fact remains that wages paid per establishment dropped less than did those for the smaller plants. Nor is it possible to learn from the figures whether the single-plant concerns in increasing the ratio of wage payments to value of output deliberately adopted a make-work policy, or whether the difficulties of management in balancing work time against marketable product caused the increase in the ratio of wages to value of output.

Comparative data for value of products and for wage payments fall far short of telling the complete story of 1931 factory production. While we should like to know more about overhead costs and profits, we must look to other than census sources. Preliminary statistics of income, released by the Treasury Department, indicate that manufacturing corporations [1] as a group reported a deficit for 1931 of more than $815,535,000, as compared with statutory net income of $4,405,772,000 in 1929. We are not told in the report, however, to what extent the 1931 losses were met by drafts upon corporate surpluses, by contributions of owners, and by losses to creditors. These data might make an advantageous showing for the smaller, single-plant organizations, although the census figures presented appear to indicate more favorable operating statements for the multiplant companies.

Certain studies have been made which indicate advantages for small producing units. The conclusions of this paper are not necessarily at variance with the earlier findings, since many of the multiplant companies have small producing units, but depend for their size advantage upon integrated operation of these numerous, small plants.

There is clearly a recent tendency on the part of certain of the large companies, particularly some of those producing consumer goods, to decentralize manufacture and assembly either by the absorption of small independent plants, or by the opening of small, new units. The purpose appears to be to take advantage of particular local production and market conditions with which the small manufacturer is considered best able to cope. Thus the large, multiplant organization endeavors to obtain the double advantage of economies of large-scale control and operation and of flexibility of production in small plants.

[1] The value of products of incorporated establishments amounted to 92.1 per cent of the aggregate value of manufactured output in this country in 1929.

DISCUSSION

By George J. Lawrence

The grouping of data from the Census of Manufactures into totals for single plant and totals for multiplant organizations gives an artificial classification that has little, if any, significance. There are other influences, which are far more important from the standpoint of profit possibilities than those considered by Dr. Thompson. Hence, one of my criticisms of Dr. Thompson's work is that it was carried out in insufficient detail to give an adequate portrayal of the forces that make for profit in manufacturing operations, and that the conclusions reached are of slight practicability.

There are four general factors that affect manufacturing operations. These are: first, the business in which the organization is engaged; second, the type of organization; third, the internal economic structure; and fourth, the policies pursued during the period before the depression. As I explain these four items, it will be apparent that a much finer grouping than that of only multiplant and single plant organizations is essential if practicable results are to be obtained.

The business in which the organization is engaged is important because all industries do not fluctuate to the same extent. Non-durable consumption goods have, over an extended period of time, shown a uniform rate of change as compared with the violent ups and downs of durable consumption goods and of capital goods. Companies engaged in the manufacture of food products, for example, have suffered but slight declines in volume compared with that of manufacturers of products used in building construction.

By the second factor, the type of organization is meant—whether this is vertical or horizontal. In the former case, there is control of a large number of different stages in production by one organization starting, in an extreme case, with raw materials and extending through manufacture and even transportation of the finished product. A horizontal organization consists of a grouping of plants performing similar operations. With a low volume of business, the horizontal type sometimes finds it possible to close some of its plants, giving proportionately more production to those left in operation, with a net economy in manufacturing costs.

The third factor, the internal economics of the organization, is concerned with the relative proportions of wages, material, factory expense and fixed charges to total manufacturing cost. There is wide variation between industries with respect to these cost elements; 1929

census figures showed that, in the fertilizer industry, wages were 7.8 per cent of the value of the products, and in the optical goods industry wages were 31.2 per cent of the value of the products. Obviously, there are also corresponding variations for material, factory expense and fixed charges. As far as this factor of the make-up of costs is concerned, it is reasonable to suppose that those industries having wages a large proportion of total cost can be most flexible to changes in volume. It is a simple matter to change the number of men employed. An industry that is highly mechanized, however, has no alternative but to continue to meet high fixed charges. Dr. Frederick C. Mills, in his *Economic Tendencies in the United States*, gives as a measure of the degree of mechanization the ratio between volume of products and the number of wage earners. This shows wide differences between industries.

The effect of the fourth factor, the policies pursued prior to the depression, is so evident as to require but bare mention. During a period of business expansion, the tendency is to extend plant and equipment considerably beyond the amount that can later be fully utilized.

Certain it is that these four fundamental factors are far more important than the simple division of plants between multiplant and single plant concerns. Undoubtedly, several industries showing some uniformity for these factors could be grouped, but this should be done only after detailed analysis.

The second point I want to make in regard to Dr. Thompson's paper is that he should have given considerably more emphasis to the fact that his sample of thirty industries is small and not fully adequate. The Census of Manufactures for 1929 listed 325 industries, so it is seen that a very small part of the total number was used. As far as the value of products is concerned, the thirty selected industries represent 26 per cent of the total for all industries. If the three industries of motor vehicles, bodies and parts and rubber tires are excluded, we have twenty-seven industries for which the value of products is 17.5 per cent of the total. Exclude boots and shoes, meat packing and petroleum refining and the corresponding figure is 7.5 per cent. Stating this differently, in the selected group of thirty industries, there are six which account for 71 per cent of the total of this group in terms of value of products.

Motor vehicle manufacture with bodies and parts and rubber tires in 1929 had a value of products that is 32.8 per cent of the total for the group of thirty industries. This gives too much weight to this industry, as far as its place in our total manufactures, is concerned. It

must also be noted that a number of very large and basic industries are not included in the group of thirty. These are clothing, iron and steel and electrical machinery, to mention the largest ones.

Leaving Dr. Thompson's paper, let us note some actual cases for what they show on the effect of the depression on multiplant manufacturing organizations.

The first thought might be that a concern with a number of plants might find it possible to close some of them. A difficulty with this proposal is that every plant is usually tooled up to manufacture a product that cannot be handled in any of the other plants. This is the case of a large radiator company that has been running every one of its eight plants one day a week. A number of motor-body manufacturers are working under similar conditions. Moving equipment from one plant to another is seldom contemplated although if, at the beginning of the depression, it had been known that its duration would have been so long, plants would have been rearranged in some cases with which I am familiar.

A second effect of the depression has been a scramble for new products. An auto body manufacturer added refrigerators to his production. At the same time, a large manufacturer of refrigerators is entering the oil burner field. There is a problem for a philosopher rather than a statistician. New products, however, are required by the manufacturers, and there is seemingly little care as to what the product is. A maker of small automotive parts, for example, secured a good volume of business in furnishing fittings for cigarette lighters.

The last effect that I will mention, but one that strikes me as being of greatest importance, is the real incentive the depression has given for securing more efficient operation. Many companies are finding their position difficult, and are watching expenses and costs more closely than had been their past practice. In several cases, to my knowledge, budgetary control has been adopted to give a complete tie-in of the operations of the entire organization. It is being proven that expenses that are watched tend to decrease and, therefore, a great deal of watching is being done.

RETAILING IN RETROSPECT AND OUTLOOK

By Paul H. Nystrom

The total retail trade of the United States in 1929, according to the Census of Distribution, amounted to $50,000,000,000. Since 1929, retailing, in common with all other types of business, has suffered serious declines and the trends in dollar sales are still downward. Sales since 1929, as estimated by John Guernsey, in charge of retail statistics under the Census of Distribution and who has studied and traced the changes since 1929, have been as follows:

1929—$50,000,000,000
1930— 44,000,000,000
1931— 37,500,000,000
1932— 30,000,000,000

These steep declines in retail sales have in part been due to price declines. There is no way of determining just how much, for there is no adequate index of retail prices. However, if the sales declines had been solely the result of price declines the volume or tonnage of goods distributed would have remained approximately the same. As a matter of fact the volume of merchandise sold has also declined. Everyone knows that there have been fewer automobiles, tires, radios, musical instruments, furniture, rugs, china, silver and jewelry sold. While the declines in units sold have not been nearly so great, there have also been actual losses in the sale of men's suits, women's dresses, coats, hats and caps, millinery, shoes, underwear, fur coats and many other goods. Even in the food lines there have been declines in the amounts sold of such staple commodities as flour, sugar, butter and milk. The published monthly figures of tonnage distribution by the Great Atlantic and Pacific Tea Company constitute an excellent index of volume food sales trends. During recent months these figures have shown a considerable decline below the preceding year.

All types of retail stores have suffered in the general declines that have occurred since 1929. Department store sales for 1932, for example, will probably show an average reduction of 40 per cent below the sales for 1929. Sales during the latter part of 1932 were running considerably more than 40 per cent below the sales of 1929. Actual dollar sales in American department stores at the present time are running at about 1917 or even 1915 levels while tonnage and units handled are running at about 1926 to 1925 rates.

Chain stores have had varying declines averaging perhaps 17 to 20

per cent of 1931 sales and 30 per cent or more of 1929 levels. The five and ten cent, the department store and the variety chains have, in general, suffered least. The losses by the independent department stores and specialty shops have in part at least been picked up by these chains. On the other hand the declines in dollar sales of shoe, candy and drug chains have been almost as great as the declines in department stores.

There are no reported statistics indicating the sales trends in independently owned retail stores throughout the country. However, the wholesale trade sales indices collected by the Federal Reserve Banks in New York, Philadelphia, Chicago and Kansas City, may perhaps be taken as a guide to what is happening in the independent retail store field. Sales of the wholesale trade during the past three years have been about as follows.

In the New York Federal Reserve district wholesale sales are down to about 50 per cent of what they were in 1929. In Philadelphia, the total wholesale trade seems to have dropped to about 60 per cent of what it was in 1929. In Chicago and Kansas City total wholesale sales appear to have fallen to about 60 or 65 per cent of 1929 totals. Most of the small independent stores of the country buy a large part of their supplies from wholesalers. If wholesale trends may be taken as an index of the trends of sales in these types of stores then independent retail stores sales in 1932 were at least 40 per cent below 1929 and perhaps more.

While the general picture of retail sales for the past three years is rather dark, there are many bright individual spots. It is a matter of interest and of encouragement to note that there are individual concerns in practically all lines of trade who have been able, not only to hold their own, but even to forge ahead. For example, despite an average general decline of 18 per cent in the Boston Federal Reserve District for the month of November, reported by 96 department and specialty stores, 8 of those stores made actual gains in sales over November, 1931. At least one of these 8 stores showed a gain of more than 15 per cent. These are the concerns that refuse to go down and who inspire and point the way to possible improvements for others in the future.

Independent retail stores and the wholesale organizations back of them have on the whole held their own remarkably well during the past year. There is nothing to indicate that such institutions are likely to pass out. Up through the 1920's when the chain store systems were rapidly gaining ground, it was generally believed that these gains were made largely at the expense of small independents. Since 1929, and

more particularly during the past year, it has become quite obvious that most of the chain stores as well as other types of retail organizations have enough to worry about without planning displacements of other types of distributors.

While independent retailers have lost heavily during the past three years, their losses seem to have been about equal to those suffered by industry in general. Indeed, there are indications in the independent retail trade and among the wholesalers who supply such dealers of a rejuvenation and regeneration of energy and initiative. There seems to be a more hopeful attitude looking toward the future now than at any previous time in many years.

This improvement in outlook is in part due to the growing belief that chain stores and other competitive factors are apparently reaching the limits of profitable and successful growth. Independent retailers in many cases have learned how to meet chain store competition. Independents and chain operators are getting down to common levels. There is a growing number of instances in which chain store managers and independent retailers have united in friendly coöperation against other outside difficulties.

One of the most important reasons for the changed attitude of independent retailers and their wholesalers may be found in the wide adoption of the coöperative principle in the form of retail buying groups and voluntary chains, many of them in arrangements with wholesale organizations. The growth of such groups, particularly in the food trades, has been very rapid during the past three years. By the end of 1932 a very large percentage of the more active, able, small independent retailers of the country had united in organizations of this character. There are now a greater number of grocery stores in such coöperative and voluntary chains than in the regular chain store systems. Through such coöperation the independent retailer has been able to establish and maintain a competitive parity in the retail trade. The coöperative movement among retailers has had its troubles and failures. Coöperation calls for qualities which cannot be developed overnight. In all likelihood many types of coöperative organizations now in existence will evolve into new and improved forms of organization. It is difficult to see at present where the movement may lead; but of this much we may be sure, it has given to independent retailers and to wholesalers more enthusiasm than any other movement within the past generation.

Under the difficult conditions of the past three years retailers have made strenuous and indeed heroic efforts to change their methods of operation to meet these new conditions. Practically all retailers have been faced by the necessity to control expenses and to keep them in

proper proportions with declining sales. This has in most cases been a very difficult problem. Retail salaries and wages, supplies and other directly controllable items, have in general been adjusted to the lower sales levels. Not so with the other items. Due to very keen competition that increased as sales declined, it has not been easy to reduce advertising expenses. It has been still more difficult to cut such expenses as rent and taxes. Costly buildings and long-term leases have proved to be tough problems. During the past year a great many long-term retail leases have been rewritten, with the voluntary consent, and in some cases on the initiative, of landlords. There have likewise been a number of retail concerns who have deliberately closed out their businesses or gone into bankruptcy rather than attempt to go on trying to pay the rent on declining sales and profit margins. There is still much to be done in the retail field in readjusting rents to a fair operating basis.

In addition to drastic efforts to control expenses, many retail stores have tried to find new lines of merchandise and new activities which could be added to take up unused space and to help maintain volume.

New variations in retail service have been devised to revive the jaded interests of the customers. The recent intensive development of new inventions noted in the industries has been paralleled by an equal development in new schemes, devices and methods of securing increased trade, or at least of maintaining trade in the retail stores.

Sales for credit have increased slightly, but, so far, the losses from bad debts, particularly among the larger retail institutions, have generally been kept well under control. The situation is apparently worse in industrial and agricultural communities served by small independent stores whose credits are often granted and business conducted on a personal basis. Many small retailers have told the writer within recent weeks of having largely increased outstandings running back for two or three years that are uncollectible until employment improves. Most of this type of credit business never gets into the public statistics and reports of retail credits. A reflection of this condition may, however, be found in the growing proportions of outstanding credits among wholesalers who serve these small retailers. When these small retailers are unable to collect their bills then their sources of supply are likewise affected.

Chain stores have special difficulties to meet in the form of a flood of state laws and threats of laws intended to restrict their growth and activity. The tax situation continues to be the major problem of chain store development in this country. Nearly all of the states in the Union are considering anti-chain store proposals of this sort. This,

while constituting a difficult matter for the chains at present, is probably only a passing phase. Efforts to place chains at a material disadvantage in the national system of distribution are almost certain in the long run to be doomed to defeat. The anti-chain laws already enacted have proved disappointing to their proponents as well as to the public.

We have heard and read much of present conditions as being world-wide. It may be of interest to compare the trends of retail trade in England, France, Germany and other European countries with the trends of this country. All nations have, of course, suffered industrial declines and severe dislocations of international trade. It may then prove startling to learn that the retail sales declines abroad since 1929 have apparently not been nearly so great as in this country. For example, department and dry goods stores sales in Great Britain during 1932 averaged less than 5 per cent below the sales of 1931. German retailing has suffered more than England but not as much as this country. The recent publication of financial statements of the large retail establishments in France indicates that while they have suffered some decline in profits, the net balances in most of these concerns are still favorable and comfortable dividends are being paid to their stockholders.

This better condition of retail trade in Europe may in part be due to the fact that retail establishments there did not extend so rapidly in the prosperous years of the 1920's as here. The more important reason for the stability in retail trade in European countries seems to be that there is a large number of public servants, of pensioners, of individuals and families drawing old-age relief, and so on, whose incomes are indeed small but still stable and whose requirements always provide a substantial back-log of business for the retail stores and their suppliers. Unemployment relief, old-age pensions, and even the poor relief doles create heavy burdens that must be met by taxation, but they also favor a stable retail trade through both good and bad times. We have much to learn yet on how to manage relief for old age and illness. Retailing has a very real interest in seeing that these problems are met squarely and soundly.

The outlook for the retail trade is no clearer than for any other industry. Certainly it is no worse than for any other. The first three or four months of this coming year will in all certainty be particularly difficult. If the common hope that business is now passing through its worst phase and that some revival may occur during the coming summer and fall, then the retail trade, generally speaking, is in excellent position to build upon this improvement and profit from it.

It is not going to be necessary to wait for sales volumes such as en-

joyed back in 1928 and 1929 for the retail trade to become profitable. Expenses have been drastically cut. Retail store owners and executives have their decks well cleared of all unnecessary impedimenta. On the whole, stocks are moderately low. There is not going to be the need to junk out-of-date buildings, machinery and equipment as will be the case for many manufacturing concerns. Even a small gain, if but a real gain, will make an important difference in the outlook of the retail trade. An executive of a large department store was asked by the writer what effect a moderate increase of say 10 per cent in retail sales from present levels would have upon his concern. His reply may be more or less typical. "With a real 10 per cent increase in sales we would be sitting upon the top of the world."

DISCUSSION

By Lawrence H. Grinstead

It seems to me that Dr. Nystrom has given us a very complete picture of the retail situation, and I have no idea of doing anything other than presenting such additional material as happens to be available.

In the Ohio State University's Bureau of Business Research, we receive monthly reports as to sales, collections, receivables and other operating matters from some 40 or 50 department and dry goods stores, all located in Ohio. While I do not for a minute want to create an impression that I consider these data to be typical of what is happening in the United States as a whole, I believe our data may be valuable in giving supplementary information concerning a restricted area having rather well known characteristics.

I was interested in Dr. Nystrom's suggestion that perhaps retail sales in 1932 would be in the neighborhood of 25 per cent less than in 1931, since data from the stores reporting to our Bureau indicate that sales for the first eleven months in 1932 were 25.5 per cent less than in the same period in 1931. Advance reports indicate a rather better Christmas trade than had been anticipated a few months ago, and this may alter the figure slightly.

With respect to the comparison between retail and wholesale commodity price declines since 1929, the Fairchild Index of Retail Prices shows a 38.1 per cent decline in the 1929–32 period, while the Bureau's index of wholesale grocery prices showed a decline of but 36.1 per cent in the same period. The latter index is based upon prices of selected and standardized commodities sold by wholesale grocers and reported each month to our Bureau; it has been worked up and tried out over

a period of eight years, and has proved to be rather accurate. A discrepancy appears in that the indices are based upon different types of commodities; the Fairchild index being based largely upon commodities in the dry goods trade, and our index, upon groceries and such non-edibles as wholesale grocers normally carry. I heartily agree with Dr. Nystrom that a retail price index is badly needed.

In connection with Dr. Nystrom's discussion of the status of credit sales, several questions arise. In order to find out what our records show, I made a brief analysis of the cash sales, open-charge sales, and instalment sales, collections and receivables for some of the stores which report to us. For this purpose, I selected stores with a rather large and relatively stable annual sales volume; stores which showed a distribution of total sales as between cash, open-charge, and instalment sales; and stores which had been reporting consistently to us for several years. Since I wanted to investigate the effect of the depression on retail sales and other phenomena, I began the analysis with 1929, and brought it down to December 1, 1932. I selected six stores for this analysis. This is not a large number of stores, certainly, but they meet the requirements, which I set up, rather well.

For the first eleven months of 1929, the distribution of total sales in these stores, excluding "house sales," showed that 4.2 per cent of the sales were instalment sales, 58.2 per cent were charge sales, and 37.6 per cent were cash sales. For the same stores, during the same period, the sales distribution picture was as follows: Instalment sales were 4.0 per cent of total sales, charge sales were 54.5 per cent of total sales, and cash sales were 41.5 per cent of total sales. Summarizing in relative terms, instalment sales remained very nearly at the 1929 level, charge sales showed a sharp drop, and cash sales showed a sharp increase.

There has been much contention as to the behavior of instalment sales in periods such as the present one, many observers freely predicting that instalment buyers would default and that business houses selling large proportions of their total sales on an instalment plan would be thrown into difficulty. Obviously, a healthful condition is indicated by the fact that receivables remain down, while collections climb. Charge, or 30-day receivables, for the first 11 months of 1929 were \$2.46 for every dollar of sales. For the same period in 1932, charge receivables were \$3.06 for every dollar of sales. This represented an increase of 24.6 per cent in receivables relative to sales in 1932 over 1929, and indicated a tendency for these receivables to pile up on the books as compared with sales. Instalment receivables for the first 11 months of 1929 were \$5.00 for every dollar of sales, while in this same period in 1932 receivables were \$7.33 for every dollar of sales. This

represented an increase in instalment receivables relative to sales of 46.6 per cent, showing a rather definite tendency for receivables relative to sales to pile up on the books.

The situation appears in a somewhat clearer light when actual dollar volumes of receivables and of sales are considered. Charge receivables showed in 1932 a 24.1 per cent decline in dollar volume from 1929, while the corresponding decline in instalment receivables was 11.4 per cent. Thus, charge receivables appear to be making a somewhat more satisfactory showing in point of dollar volume than instalment receivables. For this period, total sales declined 34.4 per cent; cash sales, 26.5 per cent; instalment sales, 39.5 per cent; and open-charge sales, 38.4 per cent. While instalment sales have retained their relative position fairly well, they have declined in dollar volume, and receivables have been piling up. Charge sales have a less important position than in 1929 relative to total sales, declining in actual dollar volume, and receivables showed a moderate tendency to pile up on the books. Thus, it does not appear that the behavior of instalment sales and receivables in this period has been particularly more disappointing than that of charge sales and receivables, sales especially being stable.

To me, the most interesting thing about these data is the fact that the consumers who buy from the six selected stores (to be cautious about the generalization) appear to have come through this depression period thus far with a higher credit morale than many thought probable, although there is, of course, ample evidence of decreased purchasing, as has been pointed out by Dr. Nystrom. Indeed, this depression appears to be supplying us with actual data with which to test our generalizations in many directions.

METHODS AND TECHNICAL PROBLEMS OF THE COMMITTEE ON THE COSTS OF MEDICAL CARE

By Michael M. Davis

The Committee on the Costs of Medical Care had a twofold task. First, to study the economics of sickness; second, to make practical recommendations. For its studies the Committee engaged a research staff. The formulation of plans and recommendations was the responsibility of the Committee itself. In this paper, I will discuss these two aspects separately: first, the problems of the Committee itself, as a group set to a task of coöperative thinking; second, the problems and methods of the research work undertaken by the Committee's staff.

For 48 persons to develop opinion and formulate recommendations requires what is sometimes called "group thinking." The real task is to keep people thinking, facing facts and tracing their implications intellectually; not reacting upon an emotional plane. In the original formation of the Committee it was the intention to secure members with varied points of view, not only those professionally concerned with medical care, but also persons familiar with research and others who presumably had the point of view of the recipient of medical care, i.e., the general public. Thus half of the Committee were physicians, about equally divided between those who were engaged in private practice and those connected with universities, hospitals, and public health work. Dentistry, nursing, pharmacy, social work, economics, sociology, and statistics were represented among the members also. If one reads the final report, the newspapers' summaries of it, or Professor Foster's article in the January *Atlantic Monthly*, it will be seen that the Committee presented a number of recommendations for dealing with the inadequacy, costs, and confusions, of the present scheme of medical care. The development of sickness insurance and the extension of the group practice of medicine were the two most important recommendations. These 48 people, however, did not attain unanimity. There was a majority report, in which 35 members concurred, although individuals expressed certain differences, some of them important. There was a minority report signed by 9 persons, all but one of whom were physicians; a second minority report by two dentists; and two statements signed by individuals.

When the size and composition of the Committee are considered and the pressure to complete the work within a specified time, it is not remarkable that no fuller agreement was attained. In the Committee

there were 27 physicians and dentists, and about half that number of economists, sociologists, and statisticians. Certain contrasts exist between the points of view and the methods of work of the two groups.

(*1*) *As to Approach:* The medical man habitually views his problems as those of a series of individuals; the social scientist views phenomena largely in terms of groups and relationships.

(*2*) *As to Methods of Investigation:* The techniques of statistics, of the collection of data from individuals, families and institutions, and of economic analysis and accounting are not familiar to medical men. On the other hand, the techniques of investigation with which the medical men were most familiar were not applicable to most of the studies with which the Committee was concerned.

(*3*) *As to Terminology:* Each group was to a large extent unfamiliar with the terminology habitually used by the other. Moreover, some words which are in common use, but which are employed by social scientists in a technical and defined sense, involved to other members of the Committee emotional connotations which proved disturbing. Examples of such words are "social," "organized," "distribution."

(*4*) *As to Procedure:* There was a lack of conscious understanding of the respective relationships of the medical and the social scientists to the problems before them. A program including certain studies had been agreed upon by everyone at the beginning of the work of the Committee. When the studies began to be undertaken, it was found that the methods of investigation required were mainly those of the social sciences. Hence the social science group within the Committee had primary influence over the conduct of the investigations, and most of the research staff of the Committee were of this group. On the other hand, there was the natural feeling of the medical men that they had a primary stake in the field.

Looking back, it now seems clear that much attention should have been devoted, during the earlier years of the Committee's work, to the presentation and discussion of facts by the full Committee, with the aim that, before the end of the fourth year, there would be an accepted body of data, upon which discussion of interpretations could have proceeded soundly. Some major studies, however, were not carried forward rapidly enough to be brought to the Committee before its fifth and last year. The Committee was therefore thrown into the emotion-producing task of framing practical conclusions and recommendations without having among its own members a generally accepted body of facts and a common understanding of terminology.

It is significant, nevertheless, that divergences between the majority and the two minority reports were those of degree rather than of princi-

ple, and are far from being as great as the *Journal of the American Medical Association* has implied in its attack upon the majority report.

Despite all its difficulties and deficiencies, I believe that the Committee achieved two important results. In the first place, its report has defined, sharpened, and advertised important facts and issues concerning the economics of medical care, for the general public and among the professions concerned. It has developed these issues from the standpoint of both consumers and producers of medical service. Controversy is to be deprecated, but in American life a certain spice of controversy often seems necessary in order that information shall be consumed, not to say digested.

In the second place, the Committee's work has established the social and economic aspects of medical care as a field for research; that some systematic attention is hereafter likely to be given to this field by scientific bodies, which will keep the investigation and analysis of findings upon an intellectual level.

For each study, the Committee's function was general approval and sponsorship. The responsibility for facts and findings rested upon the member or members of the research staff who were assigned to each study and who signed the report as authors. An explicit and unanimous vote to this effect was taken soon after the Committee got under way. In practice it did not prove easy to carry out. Research under the immediate auspices of any committee of large and varied membership is likely to be subject to discomposing pressures. The difference between the responsibility of sponsorship and the responsibility of authorship became apparent ultimately. Analysis or interpretation of the data, beyond the more obvious implications, was displayed in few of the earlier reports, but is much better developed in several issued near the close of the five years. One important type of study, although implied in the Committee's printed program, was not undertaken at all —namely, critical, theoretical analysis of medical practice from the economic point of view and the pricing of medical services.

Six different groups of investigations were included in the Committee's research program; namely—

(*1*) *Facilities:* Studies of the existing facilities for medical care requiring the assembling and analysis of facts available in printed form or secured through the numerous agencies concerned respectively with physicians, dentists, nurses, hospitals, etc.

(*2*) *Incomes and Finances:* Studies of the incomes of physicians and dentists secured through the American Medical Association and the American Dental Association, respectively, and checked and supplemented from income tax information and from an independent inquiry by the Committee's staff; and of finances

of medical agencies, chiefly hospitals, including both their capital investment and their current income and outgo.

(*3*) *Family Studies:* Investigation of the amount and incidence of sickness among representative families in the United States and of the charges and expenditures for various types of medical care. This major study of the Committee included 9,000 families, followed for at least twelve consecutive months by trained visitors. Important data of a similar kind were prepared by coöperating agencies, especially the Metropolitan Life Insurance Company.

(*4*) *Community Studies:* The medical facilities and the expenditures of the people for medical care in a number of communities, ranging in size from the city of Philadelphia to rural counties of small population.

(*5*) *Plans and Experiments:* Studies of the organization, management, finances, and quality of care furnished by experiments and undertakings in organized medical service, such as voluntary sickness insurance plans, salaried physicians in rural areas, private group clinics, and community medical services operated in connection with industrial establishments.

(*6*) *Adequacy:* Study of what constitutes good medical care for the chief diseases and conditions of disability.

The study of medical economics is new. It has been a No-Man's Land subject to sniping from both sides. As has been suggested already, its terminology and its methods of study present difficulties. Even in some of the elementary investigations, such as those of existing facilities, it was not easy to secure satisfactory data because of the lack of a common terminology among different organizations collecting statistics about hospitals; for instance, What is a "hospital bed"? What is a "day's care in a hospital"? The answers seem obvious, but there are hidden differences in definitions. The terms as actually used by agencies which record or compile such statistics, may differ enough in content to account for a 10 or even a 20 per cent variation.

The lack of satisfactory units and criteria affected the community studies. It is interesting to find that the per capita expenditures for all forms of medical care ranged from $6 in a southern rural county to over $50 in Philadelphia; hospital service accounted for about half the total expenditure in Philadelphia and only about a fifth of the total in small places. But what amount should a community, considering its general scale of living, expend in order to secure reasonably adequate medical care? The answer is, frankly, that we have no standard and we must do a great deal of spade work before we have the scientific basis for making one. The Committee's studies made a beginning in this direction. To develop some acceptable units and criteria would be of immense value to communities, professional associations, hospitals, and health agencies in making plans for the guidance and improvement of their facilities for medical care.

The 9,000 detailed schedules of the family studies furnished a mine

of information about the incidence of disease, of medical care secured by and the consequent financial problems of a large body of representative American families of all income groups in different sized communities, distributed over the country. We have generally assumed that the generosity of physicians and the contributions of the public suffice to distribute medical care according to the need for it. It was a rude shock to find that the amount of medical service received by the people correlates not with need, but with income.

If a certain number of families had been selected for intensive study as case examples to supplement the statistical analysis, this would have greatly illumined the subject, especially for physicians and laymen who are not accustomed to think in statistical terms. In the future it is desirable that statistical studies of the incidence of sickness and its financial implications shall be pursued, but it is necessary that intensive studies of limited groups of cases derived from private medical practice or from hospitals and clinics also be undertaken. Case studies not only shed light upon the meaning of statistical data, but they aid the medical and the social scientists to work together on common ground.

In studying plans and undertakings in organized medical service it is found that the United States, while having developed far less of "group-payment" through insurance and taxation than most European countries has nevertheless made a distinct beginning in some sections. Probably 2,000,000 persons now receive most or a considerable part of their medical care on an annual payment basis, i.e., through voluntary sickness insurance. This is aside from those who are participants in the so-called "group insurance," and who secure thereby "cash benefits" during sickness which they can use to meet either general expenses or medical bills, as they like. While 2,000,000 people are few in comparison with the whole population, the figure becomes significant when it is appreciated that the bulk are in a few industries, particularly mining, railroads, and lumbering, similar to those in which voluntary sickness insurance first developed in foreign countries and on which compulsory sickness insurance was first based.

The only method that could be applied by the Committee to the appraisal of quality of care was to secure the opinion of a presumably qualified expert, that is, a physician or surgeon of experience who reviewed the work on the spot. From conferences with the local physicians and surgeons, from his study of their records and a certain amount of personal observation of their work, he wrote his impressions which on only a few points could be substantiated by quantitative evidence. The study of the quality of medical service thus stands in a comparatively primitive state. Hence it is difficult to avoid the prevalent

tendency to compare the quality of organized medical service with an ideal private practice rather than with objective or measured realities of medical service as rendered.

The Committee made an important beginning in remedying this defect in its study of the "Fundamentals of Good Medical Care," prepared by a medical scientist and a social scientist working jointly. The approach was from the point of view of the medical man. Dr. Roger I. Lee of Boston directed the study, assembling the opinions of general practitioners and specialists (in medicine and dentistry) as to just what constituted adequate care for various diseases and conditions. In most instances the only method available for preparing standards of adequacy was to secure the opinion of several men and to formulate what seemed to be the net result of their views. A supplementary study was made by the social scientist on the basis of the medical estimates, namely, a computation of the amount of service required by a given population on the assumption that those standards of adequacy which had been set for the various diseases were met.

This paper may be summarized as follows:

(1) The work of the Committee on the Costs of Medical Care has opened up the study of the economics of medical service. It has shown that this field is capable of scientific investigation. The work of the Committee has sketched methods appropriate to such studies.

(2) It is of the greatest importance that scientific methods shall be applied to studying the social-economic aspects of medical care in order that these matters shall be investigated upon an intellectual plane. Up to this time they have been viewed only from the standpoint of practical interests and the field has been controversial.

(3) Research in this field requires coöperative work by the medical scientists and the social scientists. The methods with which social scientists are familiar are of primary significance in the study of many of the problems of medical economics, although in certain studies, particularly those concerned with adequacy of care, the approach is medical. In all studies, the contribution of the medical scientist is essential in the ultimate analysis and interpretation of the data. Coöperative work and inter-penetration of the two points of view are therefore essential.

(4) The university is the appropriate though not the only agency through which such research should be conducted, since under a university are brought together both medical and social scientists under conditions which facilitate the joint planning and the coöperative conduct of investigation.

Certainly there is a large opportunity for useful investigation and constructive service wherever groups of medical men, social scientists, and public spirited citizens will join hands to study objectively the needs of a community and to devise means of improving the quality and increasing the scope of medical service for the people.

THE COSTS OF MEDICAL CARE TO THE FAMILY

By Margaret C. Klem

This paper gives some of the findings of a study by the Committee on the costs of Medical Care of the sickness experience and costs of medical care among 9,000 representative white families. The study was designed to provide answers to such questions as these: Are the costs of medical care so high that the majority of families are unable to meet them or is the popular discussion of this question kept alive by the complaints of a few unfortunate families whose total bills are unusually high? Which illnesses are most costly? How often are they apt to occur? Do they occur more frequently in one income class than in another? Is there more illness among the poor than the rich? How much of the medical bill is due to the charges of the physician, dentist or nurse? How much to the specialist, the hospital, the drug store?

It was to supply answers to such questions that 9,000 families consented to keep accurate detailed records for the period of a year and that 300 public health nurses undertook to visit them every two months to obtain the necessary information. The survey period extended from the spring of 1928 to the summer of 1931, the majority of families being studied from the spring of 1929 to the spring of 1930. The families reside in 17 states and the District of Columbia; they are representative of families with high, medium and low incomes, living in large and small cities and in rural areas.

The information obtained includes the history of each illness, whether minor or severe, attended or not attended, of long or short duration, of no cost or of high cost. In addition to illnesses, preventive services and dental and eye cases are also included in the record. The scope of the information obtained may be gathered from the definition of an illness as used in the study: Any disorder which wholly or partially disables an individual for one or more days; any experience for which medical service of any kind is received; any condition, symptom, or disorder for which drugs costing fifty cents or more are purchased is considered an illness.

The study shows the relationship which exists between the average total cost of medical care for each family and the family income and the relationship between the average total cost and the size of the community in which the family resides. Charges not expenditures, have been used throughout because charges are known in great detail and expenditures only in total amounts. However, expenditures equal 96

per cent of the charges, when all income groups are considered. The poor pay a smaller percentage of their total bill than the wealthy but in each income class it was found to be generally true that expenditures exceed charges when the charges are low, and are less than charges when the families have had unusually large bills. Those with little or no expense for medical care during the survey year were paying off old obligations, while those who had had expensive illness finished the year with outstanding bills, a large proportion of which were probably owing to the physician.

In a general population the average annual charge for medical care ranges from about $50 per family for those with annual incomes of less than $1,200 to $500 per family for those with incomes of $10,000 or more. In general, charges are greatest in the largest cities and least in small towns and rural areas: The average charges for families residing in cities of 100,000 or more persons range from $78 in the lowest to $551 in the highest income class; for families in cities of 5,000 to 10,000 the charges range from $47 to $461; and for families in small towns and rural areas, from $44 to $390.

One may ask, what causes this tenfold increase in the costs of medical care? Is it that the wealthy receive more care than the poor, or do they receive the same volume of service but with higher charges per unit of service? About 86 per cent of the persons in the highest income class received medical care of some type during the year, as compared with 53 per cent in the lowest income class. In general the number who receive care and the number of services received per person are larger in the higher than in the lower income brackets, but the increase is not tenfold for any type of service. The wealthy pay more than the poor per unit of medical service, just as they do for many other commodities. When rich and poor are combined in proportions such as are presumed to exist in the United States, the average charge for medical care is $108 per family.

Some people think of medical costs as made up primarily of physicians' charges, but the average charge per family for medical care is a composite of charges for physicians' services, for hospital care, nursing, dentistry, drugs and medicines and other minor items. For a general population group, about 40 per cent of the total medical bill is for physicians' services, 18.5 per cent for dental care, 13 per cent for hospital services, 13 per cent for medicines, and 8 per cent for nursing services. Care of the eyes is responsible for only 2.5 per cent of the total, and the services of secondary and sectarian practitioners for approximately the same amount.

The physicians' charges increase from families with low to those with

high incomes, but they constitute smaller and smaller fractions of the total bill. Similarly, the percentage of the total bill due to hospital care or to drugs and medicines is larger among poor than among wealthy families. The proportion of the total charges due to nursing or to dentistry increases very rapidly with income; the range for nursing is from 3.8 per cent among the poorest families to 14.6 per cent among those with $5,000 to $10,000; and the range for dentistry is from 8.4 per cent in families with less than $1,200 to 26 per cent among families with $10,000 and more.

The composition of the medical bill varies with its magnitude. Few families with small bills received any hospital or nursing care, but many of them had the services of a physician. The hospital charges are negligible fractions of the family's total bill when this is less than $100; when the total exceeds $200, hospital charges generally equal 15 to 40 per cent of the total. Similarly, nursing is responsible for less than 10 per cent until the total charge for a family exceeds $500; but then it may become 10 to 32 per cent of the total. The findings must be interpreted to mean that families may receive physicians' services and still have comparatively small total charges; but, if they experience illness which requires hospitalization or nursing care, their total medical bill will be comparatively large.

But in spite of the emphasis which has been placed on preventive medicine in recent decades, families are spending a very small per cent of their total "medical" dollar for this type of service. Disregarding the fraction of the dental bill which is due to services of a preventive nature, only 1.4 per cent of the total charges is for preventive medicine. About 3 per cent of the total is for eye care, 17 per cent for dental care and 78.5 for the care of illness. These proportions vary among families in the several income classes. About 87 per cent of the total charges incurred by the poorest families is for the care of illness, 10 per cent for dental care, 3 per cent for eye care and 1 per cent for preventive services. Among families with incomes of $5,000 to $10,000, 71 per cent of the total is for care of illness, 24 per cent for dental care, 3 per cent for eye care and the surprisingly small per cent of 2.4 for preventive care. From the poorest to the wealthiest families, the proportion of the total due to dental services increased from 10 to 27 per cent, but preventive services increased only from 9/10 of one per cent to 2.9 per cent.

Let us now consider that part of the total bill which was incurred for the care of illness. More illness was reported by the wealthy families than by the poor, but the proportions of the illnesses which received hospital care were substantially the same among all income classes,

from 6 to 7 cases in each hundred being hospitalized. When the costs of medical care are examined with respect to the severity of illness, it is found that illness which at one stage or other involved hospitalization consumes 50 per cent of the total bill, regardless of the size of the family income. In the charges for hospitalized illness are included not only the charges for hospital care, but also the charges for professional and non-professional services, drugs and medicines and any other charges incurred for the hospitalized case. Even though the average charge for medical care increases tenfold from the poorest to the wealthiest families, hospitalized cases are responsible for one half the total bill in each income class.

So far we have considered only the average charges for medical care and the composition of the average medical bill. For the majority of families, medical bills present no problem, and except in the lowest income classes, probably most families could easily meet the average charge. But the problems of the costs of medical care are rarely concerned with the ability of the family to meet the average cost. The difficulties are ordinarily concerned with the ability of a few families to pay for unusually frequent or unusually expensive illness—especially when illness strikes the wage-earner. An understanding of the costs of medical care must embrace knowledge of how much the costs vary, how many families incur large or small obligations, and what fractions of the total costs fall upon small or large proportions of the families.

In the lowest income class the average charge for medical care is $49. While about 70 per cent of the families have charges of less than this amount, 3.5 per cent have charges totaling $250 and more. The average charge to this "high cost" group is more than half the average annual income of the group, and the sum of their medical bills amounts to almost one-third of the total for the entire income class. If the total medical expenses of this income class are divided into almost equal thirds, one is borne by 80 per cent of the families with charges of less than $60 each, one by 17 per cent with charges of $60 to $250 each, and the last by 3.5 per cent with charges of $250 and more each. The first group of families has no complaint against the high cost of medical care. They were the lucky ones, but among the last group are found those who mortgaged the home, took children out of school, used all their savings and those of relatives in an effort to meet their medical obligations.

The unequal distribution of charges is found in each income class, the main difference between the poor and the rich appearing in the total size of the bill, but not in the unevenness of the load. For example, among families with incomes of $3,000 to $5,000, approxi-

mately one-half of the total medical bill is incurred by 86 per cent of the families and one-half by 14 per cent. Even among families with incomes in excess of $10,000, this disparity between the distribution of the families and the distribution of their total charges is very pronounced. About 67 per cent of the families have medical expenses of less than $500 and they incur 26 per cent of the total bill, while the 33 per cent of the families with charges of $500 and over bear 74 per cent of all charges in the income class.

It is these findings with respect to the fractions of the population for which the major portions of the costs of medical care are incurred which give weight to the statement that the problems presented by the costs of medical care are as much if not more concerned with the uneven distribution of the costs as with their absolute magnitude. With these facts on the uneven distribution before us, it is not difficult to understand why the popular literature of the day is replete with lay complaints that the costs of medical care are high. Those who are so unfortunate as to be stricken by frequent or severe or protracted illness and who must carry the burden of costs find no comfort in the average cost. Nor is it surprising that their experiences become transmuted into a tirade against the "high cost of medical care."

If a solution is to be sought can it be found by applying the principle of insurance to those specific types of service which are chiefly responsible for the unevenness? Is one type of service more than another responsible? How much will it help if the services of physicians are provided on an insurance basis? How much if the services of dentists or hospitals or nurses?

A quantitative analysis of this problem reveals that the responsibility for variation in the costs of medical care cannot be ascribed to the charges incurred for the services of physicians or of the hospital or of the dentist or of the nurse. The responsibility for variation in the costs is a broad one and follows from variations in the costs of all of the principal types of service. It rests upon the factors inherent in the nature of all medical costs which can attain appreciable magnitude.

Neither the rich nor the poor receive the medical care which they need. Medical science and medical art have made almost incredible advances; but the benefits which medicine offers the people are very inadequately realized. The deficiencies are especially notable in the receipt of dentistry and of preventive services. Charges are not alone responsible for the lack of care; widespread public ignorance of the opportunities offered by modern medicine, deeply rooted spending habits, the excessive use of self-prescribed drugs and medicines, and the utilization of quacks and charlatans complicate the problems and hinder

the receipt of good medical care. If the barriers of charges are lowered, we may look for a fuller utilization of medical services. And the barriers may be lowered by three means: (1) by eliminating wastes and transferring useless or harmful expenditures into more desirable categories; (2) by reducing the costs through more efficient and more effective provision of medical service; and (3) by distributing the burden of costs more equably through group purchase.

THE ABILITY TO PAY FOR MEDICAL CARE

By Louis S. Reed

The purpose of this paper is to appraise the capacity of the people of this country to pay for medical care. The problem has two aspects. First, are people able to afford the costs to them of such medical care as they now receive, i.e., to what extent do present costs constitute a burden that is borne with difficulty? And second, are people able to pay the cost of adequate medical care? This is important since ample evidence indicates that a large proportion of the population does not now obtain adequate care.

Let us recognize at the outset that there can be no categorical answers to these questions. It might be said that a person's ability to pay for medical care is measured by the extent of the financial margin which he possesses over the cost of such food, clothing and shelter as is necessary to keep him from perishing. This is true, but hardly useful. For medical care is not the most important thing in the world. The need for medical care is only one need among many. Accordingly the real question is: Are people reasonably able to pay the price of medical care—how much can they afford to spend for medical care in view of other important wants and needs? In general, any answer must be in the nature of an opinion, and reasonable individuals may well hold different opinions.

Ability to pay for medical care depends in part upon the method through which the service is purchased. In this country the usual method of procuring medical care is through individual payment; the individual, when his need becomes apparent purchases such care as he chooses from whatever source he may desire. But medical care may also be bought and paid for through various types of group payment. The essential characteristic of this form of payment is that individuals pay fixed, pre-determined sums into a common pool out of which the cost of care for all members of the group is defrayed. The contributions may be equal as in insurance, or unequal as when the groups are made up of taxpayers. Under individual purchase, a person's ability to pay is determined by his resources and credit at the time. Under group purchase, ability to pay is determined by the collective resources of the group.

The ability to pay for medical care depends upon income, upon the cost of living, and upon the cost of medical care.

In 1928, the total national income amounted to $89,419,000,000.

If this income were divided equally, each family would have received $3,105. But income, of course, is not equally distributed. Dr. Maurice Leven, formerly of the staff of the Committee on the Costs of Medical Care, has made an estimate of the distribution of "census" families in 1928 according to income. The census included in its count of families more than two million single individuals living by themselves. If these "one-person" households are excluded, it may be roughly estimated that of the 26,714,000 families composed of two or more persons each, in 1928, 13.4 per cent had incomes under $1,000, 33.1 per cent had incomes under $1,500, and slightly more than half, 53.2 per cent had incomes under $2,000 a year. Study of the recent census statistics relative to the gross incomes of farmers, and the value and rental of homes occupied by non-farm families, indicates that this estimate that 13.4 per cent of all families had incomes under $1,000 may be accepted as a minimum.

It is impossible under the time permitted to discuss at any length the patterns of expenditure and the standards of living of families of various income levels. All that time permits is the statement that at the 1928 price level, estimates of the cost of a so-called minimum subsistence standard of living for a family of five in urban communities, ranged from $1,200 up. With due allowance for the fact that the average family (of two persons or more) has 4.1 members, not five, and that the cost of living is less in rural areas and small towns than in cities, it appears that at least 10 per cent of the families in this country were unable in 1928 to maintain a minimum subsistence standard of living. Even in the prosperous year 1928, then, at least 10 per cent of all families were doing without things which economists and social workers considered essential to human, decent existence. The U. S. Bureau of Labor Statistics' "health and decency" or "minimum comfort" budget for a family of five, comes at 1928 prices to approximately $2,100. That standard of living was beyond the reach of nearly half of the population.

As to the cost of medical care, the total expenditure in the United States in 1929 for medical care was approximately $3,656,000,000 or $30.08 per capita. Of this amount, 14 per cent was paid through taxation, and represented the cost of medical service provided by governmental agencies. An additional 5 per cent of the cost was borne by philanthrophy in the form of contributions to hospitals and clinics, and another 2 per cent was borne by industry, mainly as the cost of medical service in industrial accidents. Individual patients spent a total of $2,886,000,000 or $23.58 per capita.

The average amounts spent annually for medical care by families of

various income levels have been indicated in the preceding paper. But as Miss Klem showed, each year the great majority of families of any income level will have medical expenses far below the average, while a small minority will incur expenses of very large amount. Thus, in any one year, from 2 to 4 per cent (depending upon the size of community) of families with incomes under $1,200 will incur charges for medical service of over $400; from 1.0 to 1.5 per cent of families with incomes of $1,200 to $2,000 will incur charges for medical care of over $500, while approximately 1.0 per cent of families with incomes between $3,000 and $5,000 will have medical costs of over $1,000. In general, each year, 2 or 3 per cent of the families of any income level will have one or more cases of serious, expensive illness among its members. The cost of the necessary medical treatment in these cases will amount to sums equivalent to one-quarter or more of the family's annual income.

What conclusions may be drawn from these facts? In the first place, it is obvious that the current complaint about the "high cost" of medical care is not due primarily to the fact that the average cost is too great, but to the fact that the cost is unevenly distributed, to the fact that in any one year, a large proportion of the total cost of medical treatment is concentrated upon a small proportion of the population. For this small proportion, the cost of medical care in any one year, is high indeed.

In the second place, it seems probable that the ability of people to pay for medical care is lessened by the extreme variation in medical costs to the individual family from one year to another. On the whole, people are much more able to meet an expense which is relatively stable from year to year, and which may be known in advance and budgetted, than an expense which varies widely from time to time, which is unpredictable and cannot be budgetted. Undoubtedly a part of the population is too poor to pay the cost of needed medical service, no matter whether that cost is evenly or unevenly distributed over time. But above this stratum are many persons who are now unable to pay for the medical care which they receive, not because the average cost over a period of years is beyond their means, but because the cost varies so greatly, and because they have no savings out of which unanticipated expenses of large amount may be met. That this is so is evidenced by the amount of charity medical service given in cases of severe, expensive illness. Thus, in 52 per cent of the cases of all hospitalized illnesses occurring among families with incomes of $1,200 or under, the patient receives free hospital care, and probably free service from physicians as well. Similarly of all hospital cases

among families with incomes of $1,200 to $2,000, 23 per cent are cared for free of charge. Very few of these families are indigent in the accepted meaning of that word. They have a home, they buy their own food and clothing and pay their doctor's bills in ordinary illness. But when a serious illness which requires hospitalization, specialist service, nursing care and the like, occurs, these families are unable to pay their way, and seek charity care.

These facts call into question the suitability of the present method of purchasing medical service, i.e., individual payment. Serious illness requiring hospitalization, specialist service and other adjuncts of modern medical treatment has become a financial catastrophe like fire. And, as in the case of fire, the costs or financial consequences are too large to be conveniently met out of individual resources.

The large volume of free service, entailed, to a considerable extent, by the uneven distribution of sickness costs, gives rise to problems in its turn. There are obvious signs that the present system of hospital financing is beginning to crack under the load of expense for free care, and that if the load is to be carried, funds must be received from sources other than the fees of paying patients and voluntary contributions. The burden is becoming too heavy for private charity to carry. Nor is free care an unmixed blessing to those who receive it. Charity, if the lesser of two evils, is still an evil. Obviously the situation calls for insurance, and all experience shows that if there is to be insurance, it must be compulsory, at least for those in the lower income ranges.

If medical care were paid for through group purchase, would the people of this country be able to afford the cost of adequate care? This question may be considered from three aspects: (1) as applying to the nation as a single unit; (2) as applying to the people of various income levels; and (3) as applying to the inhabitants of the various states.

It is difficult to estimate the cost of furnishing adequate medical care. The concept of adequate medical care is in itself not subject to precise definition in all particulars. Further, the cost of such care would depend upon the efficiency of the agencies supplying the service, upon the remuneration afforded the professional personnel, and upon local conditions. From various studies made by the staff of the Committee on the Costs of Medical Care, it may be estimated that the cost of complete adequate medical care for a representative population would be about $40 per capita. This includes the cost of dentistry, public health services, and institutional care for those with mental and nervous disease. It is on the assumption that there are no waste ex-

penditures for patent medicines or unqualified practitioners and that the service is provided by organized medical units. On this basis, complete adequate medical care for the entire population would cost approximately 5 billions.

Could the nation as a whole afford an expenditure of this amount for medical care? In 1929, over 20 billions of dollars were spent in this country for confectionary, tobacco, liquor, amusements, travel, pleasure automobiling, jewelry and similar items. Obviously the medical item can be met.

If medical care were paid for through insurance, what proportion of the population is prosperous enough, and what proportion too poor, to pay the cost of adequate care? A reasonably good level of medical service, exclusive of dentistry and of such types of services as people do not ordinarily purchase privately, i.e., public health service and care provided by governmental agencies, can be furnished for $20 per capita or $82 per family. In 1928, not less than 10 per cent of all families were unable to maintain a so-called minimum subsistence standard of living. In general, these families had incomes under $1,000, and spent not more than $47 a year, on the average, for medical care, exclusive of dentistry. For families so situated to increase their expenditure for medical care to as much as $82 a year, would necessitate cutting down on expenditures for other things which in the long run are probably as essential as medical care. Accordingly, it would appear that at least 10 per cent of the population was unable even before the depression to pay the cost of adequate medical care, exclusive of dentistry.

Thus far dental care has been left out of the reckoning. On rather scanty evidence it may be estimated that adequate dental care would cost $10 per capita or $41 per family. The relative inadequacy of the dental service received by people at present may be gauged from the fact that families with annual incomes of $1,000 spend about $3.00 a year on the average for dental care, and those with incomes of $1,500, about $9.00 a year. It is evident that with adequate dental care costing $41 per family per year, such care is beyond the reach of the lower half of the population.

If that portion of the population which cannot afford the price of adequate medical care, is to receive such care, the cost must be borne, in part at least, by the remainder of the population. This raises the question whether there are any states so poor that they could not afford to furnish adequate care for such of their people as could not care for themselves. In 1919, the average income per family in the seven poorest states was as follows:

States	*1919 income per family*
Mississippi	$1,466
Alabama	1,492
Tennessee	1,568
Arkansas	1,590
Kentucky	1,684
Georgia	1,758
North Carolina	1,843
All United States	2,763

All these states were in regional areas where per capita income did not change by more than plus or minus 7 per cent from 1919 to 1926. It may be assumed, therefore, that these figures are roughly representative of income in the latter year, and also of income in 1928 or 1929. In four of these states, Mississippi, Alabama, Tennessee and Arkansas, the average income per family was less than $1,600.

A reasonably good level of medical care, exclusive of dentistry and of such types of services as people do not ordinarily purchase privately, would cost $82 per family. In addition a certain amount of dental care would have to be provided. A minimum of such care would cost at least $12 more. Finally, at least $9 per family must be allowed as the cost of those services which persons do not ordinarily purchase privately. This brings the total necessary cost to $103 per family per year, a sum obviously impossible for the inhabitants of the four poorest states.

The conclusions reached in this examination of the capacity of the people of this country to pay for medical care are as follows:

1. Each year a large proportion of the total cost of medical care is borne by a relatively small proportion of the population. It is this fact which causes complaint about the cost of medical care. If persons are to be able to meet the expense of medical care to the fullest extent that their means permit, the cost must be placed on an insurance basis.

2. Prior to the depression, the nation as a whole was sufficiently prosperous to be able to afford the cost of adequate medical and dental care for all.

3. If medical care were purchased through insurance, at least 10 per cent of all families were too poor, even before the depression, to pay the cost of adequate medical care exclusive of dentistry.

4. Adequate dental care is beyond the financial reach of half of the population.

5. Before the depression there were at least four states, the inhabitants of which, considered as a unit, were too poor to afford the cost of adequate medical care.

DISCUSSION

By A. C. Bachmeyer

Dr. Reed has submitted an excellent résumé of the splendid report which he prepared for the Committee on the Costs of Medical Care upon this very important and difficult subject. While the studies were all made during the recent years of abounding prosperity, the dire economic situation confronting the nation at this time only serves to emphasize the difficulties of providing adequate medical care for all of the people.

As the essayist has indicated, no definite answer can be submitted as to the ability of a large portion of our people to pay the cost of adequate medical service. It is quite apparent both from the data presented and our own personal experiences that the individual payment plan imposes unusual hardships upon many families and may be the cause of their financial ruin.

The studies that have been made clearly show that about 80 per cent of the families having incomes of less than $1,200 had annual charges for medical care of less than $60 each and an equal percentage of those having incomes between $1,200 and $2,000 had charges of less than $100.00. Thus 80 per cent of these low income groups should have had but little difficulty in meeting these costs, even under the individual payment plan. Attention is called to the fact that these charges are inclusive not only of physician's fees but also of hospital charges, drugs and patent medicines, corrective lenses, braces and all factors entering into medical care.

It is not the cost of care in the usual short illness (which makes up between 80 and 90 per cent of the physician's service) that is so burdensome. It is rather the cost of the serious illness (which cannot be predicted for the individual) that is most troublesome. This cost falls upon about 20 per cent of the people.

These several studies show that about 60 per cent of the burden falls upon 20 per cent of the people. Further, almost 25 per cent of the load falls upon only 5 per cent of the public.

It is because it cannot be predicted when an individual or family may be in this latter group that many look with favor upon some plan that will spread the cost of service over a period of time and over a large group of individuals for whom certain predictions can be made.

The group plan of purchase or "sickness insurance" as it is usually entitled, is now in use in one or another form in more than one-half of the nations of the world. In many instances the plan was originally

proposed as a social measure and had for its primary purpose the replacement of income lost during sickness. Medical care was a secondary consideration. As these systems have developed, an ever increasing amount of attention has been given the element of professional service, and as the primary purpose becomes the restoration and preservation of the individual's health rather than his compensation for the loss of health, the systems become more satisfactory to both patient and medical profession.

In a number of instances the group purchase plan began as a voluntary system but the usual experience has been that this voluntary plan has only been a stage in the development of compulsory insurance, at least for the lower income groups. In most instances, especially under the voluntary system and particularly when in the hands of private carriers, costs have steadily increased.

While there can be no objection to the principle of the insurance plan of purchasing medical care there are grave dangers to both public and medical profession in the methods of its application. The interposition of any third party between physician and patient will interfere with the quality of medical service and should therefore be avoided.

There appears, however, to be no good reason why a plan of sickness insurance adaptable to the American philosophy of life, to cover either the entire cost or only the cost of care in the more serious illnesses, cannot be devised, based upon the experience of other nations and upon those experiments in this field that are now being conducted on a small scale in this country. The problem is one, however, that requires the most diligent and careful study.

As indicated in the closing paragraphs of Dr. Reed's paper it is problematical whether even such a plan would be applicable in some of our states. Recognizing the wide divergence that exists in the mode of living, in social, economic and health standards in the various sections of our country it is quite apparent that no single plan for the purchase of adequate medical care can be applied to all parts of the nation. There is need for clear thinking and careful planning by local communities and closely knit sections, in order that satisfactory programs for providing medical service for all the people may be devised and that our social evolution may be wisely directed.

The medical profession must take an important part in this discussion and planning, for the quality of the service provided depends entirely upon the competency of the physician and upon his willingness to participate in the program. It is the general experience that an insured group will demand a larger amount of professional service than will a non-insured group of individuals. If the quality of the service

is not of the very best, the price, no matter what it be, will be too high.

There are widely recognized defects in the American system of medical practice. There are, however, many basic advantages in our system that never should be sacrificed. It would be very unwise to substitute any plan for the purchase of medical service that was not fully adapted to the philosophy of American citizenship.

The statement is often made that physical and mental health are the greatest assets of the nation and of the individual. The cost of adequately protecting these assets is indeed small when compared with the capitalized value of the human lives which make up the nation. Neither is it out of proportion to the national income. If it is true that the American public purchases what it is taught to buy, then it would appear that the people need to be convinced of the value of the proper care of their health and of the need for adequate medical service. If once convinced of these values there will be little difficulty in developing satisfactory programs for providing medical service, even though it mean a sacrifice of some of those non-essentials that make life more comfortable.

PHYSICAL VOLUME OF PRODUCTION OF GOLD, SILVER, AND OTHER COMMODITIES

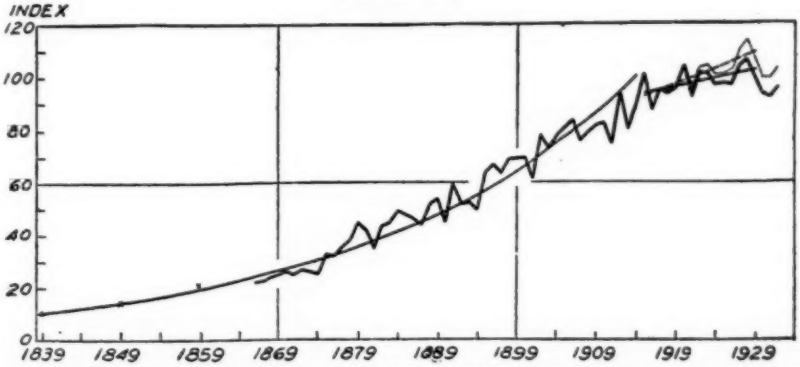
By G. F. Warren and F. A. Pearson

The economic maelstrom is due to the collapse in commodity prices. A correct diagnosis must precede any constructive policy for relief. One tabulation of assumed causes includes 118 explanations but it is far from complete. Installment buying, tariff, prohibition, unbalanced budgets, technocracy, over-production, are a few of the multitude. Many of these, such as unbalanced budgets and movements to restrict markets, are results of the depression rather than its cause.

The over-production theory can readily be answered by studying production. For 75 years before the War, the production of food and feed crops in the United States increased at a fairly uniform rate of 3.02 per cent per year. From 1915 to 1929, the rate was only 0.60. The irregularities are primarily due to weather, but there has been a definite slowing up of the increase since the War.[1] A part but not all of this is accounted for by a decrease in the number of horses and mules (Chart I).

CHART I

INDEX NUMBERS OF THE VOLUME OF FOOD AND FEED CROPS PRODUCED IN THE UNITED STATES, 1839-1932
(1926-30 = 100)



From 1839 to 1914, production increased at the rate of 3.02 per cent per year. From 1915 to 1929, it increased only 0.60 per cent per year. The upper curve shows production corrected for the reduced number of horses and mules.

There has been a distinct decline in the production of food and feed crops per capita. For 75 years before the War, production per capita increased 0.74 per cent per year. From 1915 to 1929, the production

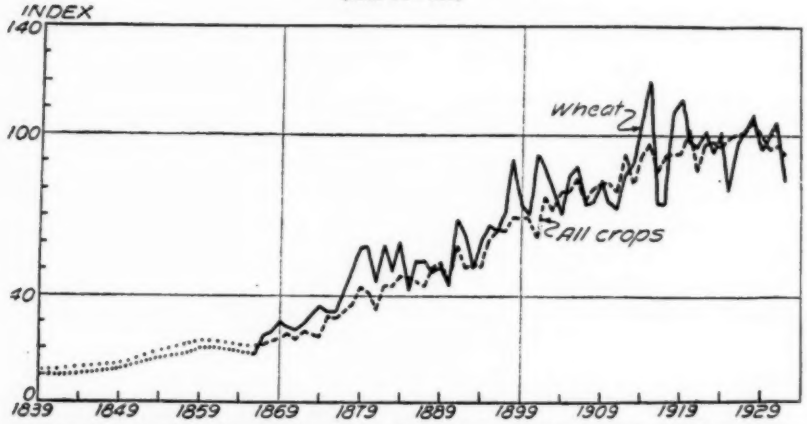
[1] G. F. Warren and F. A. Pearson, *Prices*, pp. 39-63, John Wiley and Sons, 1933.

decreased 0.85 per cent, and decreased 0.29 per cent, after allowance is made for the decline in numbers of horses and mules.

High production is evidently not the cause of the agricultural depression. The evidence for individual crops is the same. In 1932, wheat production per capita was the lowest for any year since 1866. It is true that the stocks of wheat in the United States are rather high. This is primarily due to difficulties in selling wheat in competition with countries whose money has been more stable in value (Chart II).

CHART II

UNITED STATES WHEAT PRODUCTION COMPARED WITH THE PRODUCTION OF ALL CROPS, 1839–1932
(1926–30 = 100)



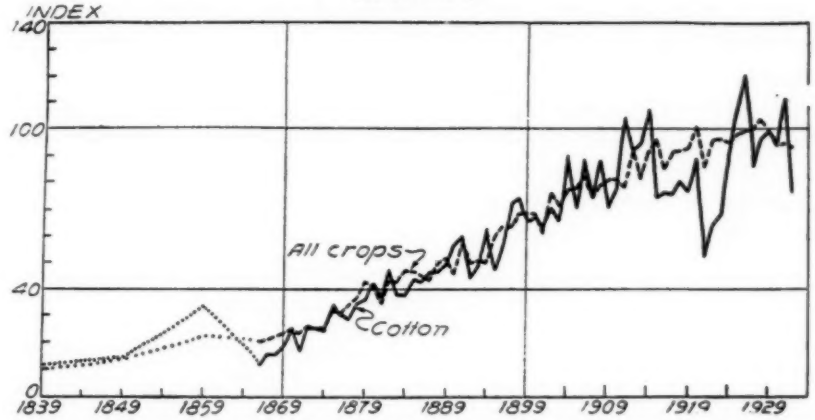
Wheat production has followed all crops very closely, except for three periods of high production and variations due to weather. It would be slightly better to compare wheat production with the production of all other crops, but the two curves follow each other so closely that it leads to no error in conclusion to include wheat, with the weight that it receives, in all crops. Previous to 1866, data for the census years only are included.

World wheat production per capita does not indicate excessive production. The production of corn per capita in 1930 was abnormally low, yet corn fell in price. The crop this year is large owing to unusual weather. Last year the cotton crop was large; this year it is small (Chart III). Large stocks have accumulated because unemployment has reduced consumption. The production of lumber and forest products per capita is the lowest for any year since 1839. The production of coal showed no material increase before the depression and decreased decidedly in 1931–32.

For 75 years before the War, the production of minerals, fuel and power increased at a very uniform rate. The production was rather high in 1929 but not sufficiently high to account for the collapse in prices. The production is now low.

CHART III

UNITED STATES PRODUCTION OF COTTON COMPARED WITH THE PRODUCTION OF ALL CROPS, 1839–1932
(1926–30 = 100)



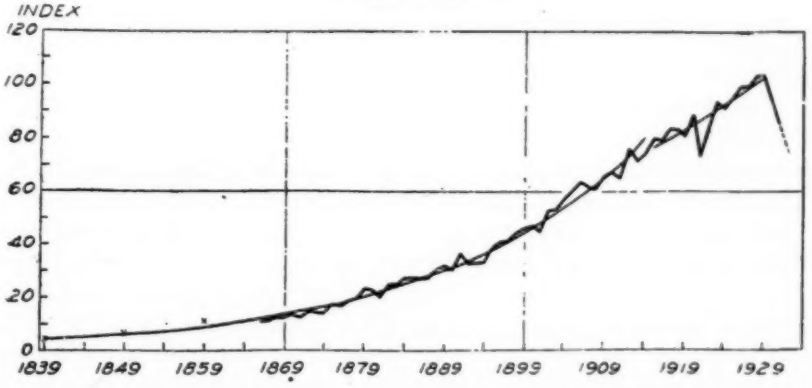
The production of cotton has followed very closely the production of all crops. From 1915 to 1923, there was a succession of comparatively short crops.

Before the War, the total production of all commodities increased at the compound rate of 4.03 per cent. From 1915 to 1929, the rate of increase was only 2.11 per cent per year (Chart IV).

Before the War, the output of all commodities per capita rose 1.73 per cent per year; for the period 1915–29, it rose to 0.64 per cent per

CHART IV

INDEX NUMBERS OF THE PHYSICAL VOLUME OF TOTAL BASIC PRODUCTION IN THE UNITED STATES, 1839–1932
(1926–30 = 100)



From 1839 to 1914, the total volume of basic production increased at the rate of 4.03 per cent per year, and from 1915 to 1929, production increased only 2.11 per cent per year.

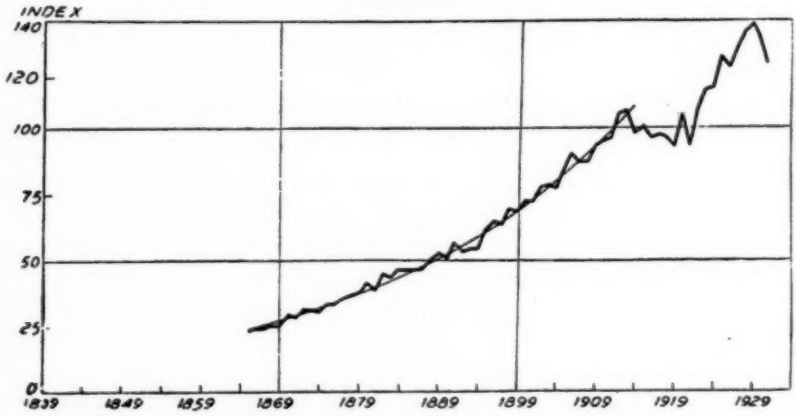
year. Population increased at the rate of 2.28 per cent per year prior to 1915; from 1915 to 1929, 1.46 per cent per year.

Snyder's index numbers of physical volume of production for the world lead to the same conclusion. From 1865 to 1914, production increased 3.15 per cent per year (Chart V). Since the outbreak of the War, this rate of increase has been checked.

So far as the writers have observed, no person who has studied the statistics of production has found any evidence to support the thesis that over-production caused the depression, nor have they found any record of a person who now explains the depression on the basis of

CHART V

SNYDER'S INDEX NUMBERS OF WORLD PHYSICAL VOLUME OF PRODUCTION, 1840–1931
(1910–14 = 100)



From 1865 to 1914, the world's physical volume of production normally increased 3.15 per cent per year. Production was materially reduced by the World War and by the Panics of 1920 and 1929, but is gradually increasing.

production who foresaw the depression. There are records of correct forecasts on the basis of monetary factors.

Some persons have observed a small portion of the production process and have made the mistake of accepting the illusion of spectacular increases in efficiency. A farmer with a tractor, truck, and automobile produces more than twice as much wheat as he produced with horses. This gives an erroneous impression of increased efficiency. Much human time was required to produce these new tools and the fuel for them. The total human time required to produce a bushel of wheat has probably not decreased much more than the average increase in efficiency in the production of all goods. Similar illusions have resulted from superficial observation of the visible processes in a shoe factory.

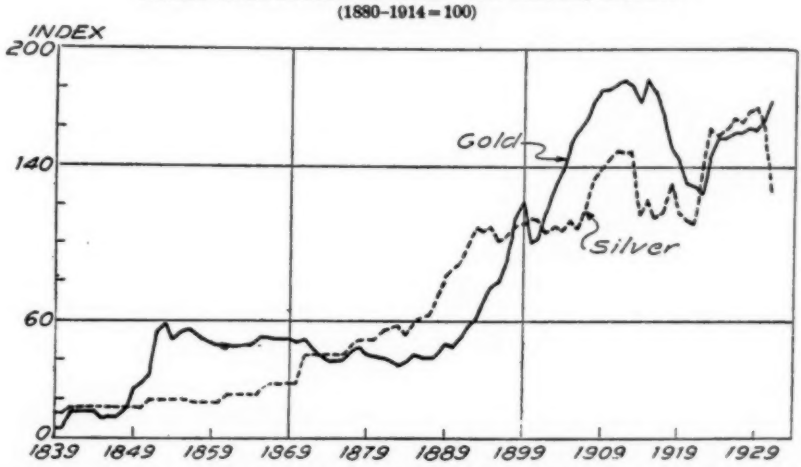
The complete process from grass, to hide, to leather, to shoes, to fitting, and selling at retail has not been spectacularly decreased.

At no time in history have we any statistical evidence of a sudden increase in the output of all goods per capita. Spectacular inventions sometimes affect one industry, and there is a steady growth in efficiency in all industry, but never a sudden increase in all industry. We now have two examples of striking decreases in output per worker due to unemployment resulting from the Panics of 1920 and 1929. From such low bases a rapid increase to normal can occur.

Another popular error is the assumption that the depression is a business cycle. This is a collapse in the price structure from which

CHART VI

WORLD PRODUCTION OF GOLD AND SILVER, 1839–1932
(1880–1914 = 100)



Silver production is much more uniform than the production of gold. Symmetallism would give a more stable measure of value than gold, but would not be entirely stable.

there is no cyclical recovery. During such a collapse, several suppressed business cycles may occur. A favorable cycle in the textile and shoe industry occurred in 1932.

Gold production, compared with the production of all commodities, is very erratic. In the two years 1852 and 1853, the total production of gold was more than 24 per cent of the entire accumulations of monetary gold in all previous history. There was a long period of low production which culminated in the depression of the nineties. This was followed by a period of high production, and now by a period of low production (Chart VI).

The production of silver has followed the production of all commodities more closely than has the production of gold.

RELATIONSHIP OF GOLD TO PRICES

By G. F. Warren and F. A. Pearson

The price of a commodity is a ratio of two values. It is the ratio of the supply of and demand for gold to the supply of and demand for another commodity. The average price of all commodities is the ratio of the supply of and demand for gold to the supply of and demand for all commodities. If the explanation of the depression is not to be found in the supply of commodities, we must turn to one of the other three factors for an explanation.

The demand for commodities was good at the time the collapse occurred. The severe unemployment has reduced demand, but this is primarily a result of rather than the initial cause of the depression. The reduced demand resulting from depression is in turn a cause of further depression.

The supply of gold has not been keeping pace with the normal growth of business, but the supply of gold is sufficient to support prices at about the pre-war level with all the world back on a gold basis, and gold used with pre-war efficiency.

The demand for gold was so low as to allow prices on a gold basis to double. This was followed by a demand so high as to cause the present depression.

In 1850, world monetary stocks of gold amounted to 54 million ounces (Table I). By 1870, this had much more than doubled. In the next 20 years, only a small increase occurred. On an 1880–1914 base, the world stocks for 1850 are represented by 23, and in 1870 by 57. In this same period, the world production of all other commodities increased from 22 to 42. Since the rate is very uniform at about 3.15 per cent, production doubles in about 22 years. In 1850, the ratio of gold stocks to production was 105. Twenty years later, the ratio was 136. Prices in England for these two years were 105 and 131.

The ratios of world monetary stocks of gold to physical volume of production compared with wholesale prices in England are shown in Table I and Chart I. There are short-time discrepancies due to velocity of circulation, credit, business cycles, and other causes; but at no time did one of these lines get away from the other and remain away. The only exception was from 1915 to 1930. It can now be said that at no time in 94 years have prices deviated from the ratio of gold to production without a return to that ratio.[1]

[1] G. F. Warren and F. A. Pearson, *Prices*, pp. 74–127, John Wiley & Sons, Inc., 1933.

TABLE I

RELATION BETWEEN WORLD'S MONETARY STOCKS OF GOLD, PHYSICAL VOLUME OF PRODUCTION, AND WHOLESALE PRICES IN ENGLAND

Year	World monetary gold, millions of fine ounces	Index of gold stocks, 1880–1914=100	Index of world physical volume, 1880–1914=100	Ratio of gold stocks to production, 1880–1914=100	Prices in England, 1880–1914=100
1850	54	23	22	105	105
1870	131	57	42	136	131
1890	169	73	74	99	98
1910	340	147	140	105	106
1914	388	168	146	115	117

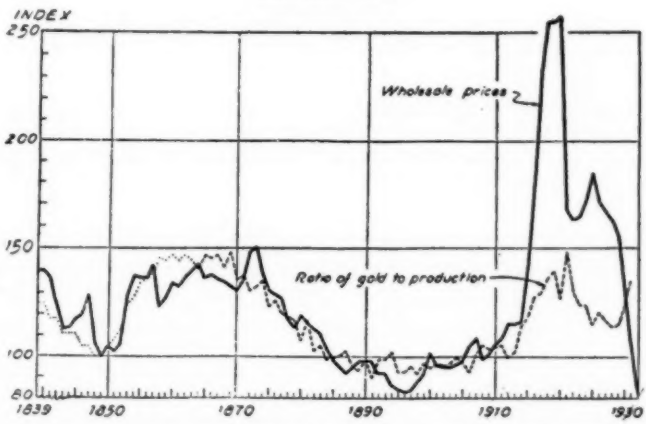
When the price level falls, world production is reduced by unemployment so that gold stocks divided by production gives a high answer. This is a temporary situation resulting from low prices and is generally one factor in price recovery. The law of the relationship of gold to prices may be stated as follows:

$$\frac{\text{World gold stocks}}{\text{Production of all basic commodities}} = \text{Wholesale prices of all commodities.}$$

The same principle holds for the United States, but previous to 1870 the relationship was not so close as was the case of England.

CHART I

RATIO OF WORLD'S MONETARY GOLD STOCKS TO WORLD PHYSICAL VOLUME OF PRODUCTION COMPARED WITH WHOLESALE PRICES IN ENGLAND, 1839–1932
(1880–1914=100)



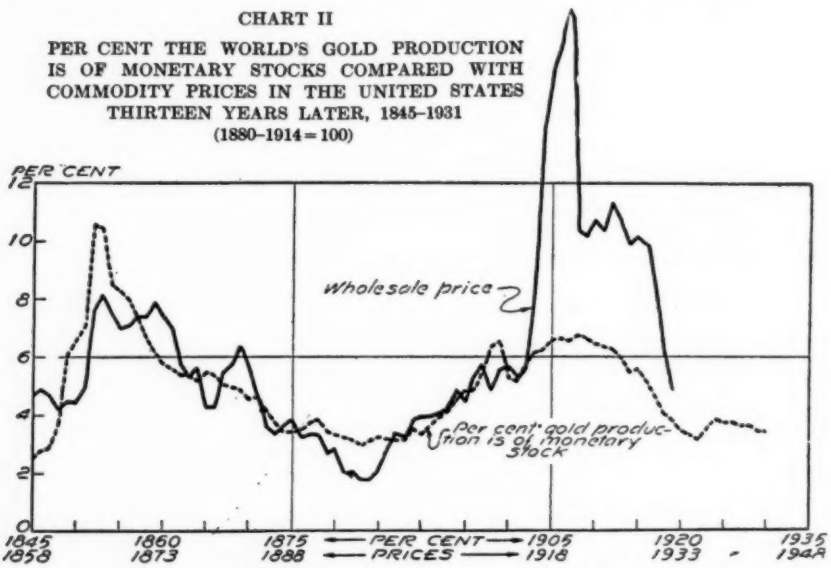
For the 75 years before the World War, prices rose if the world's monetary stocks of gold increased faster than the production of other things and fell if gold increased less rapidly. An exception occurred during and after the World War when most of the countries of the world discontinued the gold standard. However, the relationship has been restored.

Since gold is an important industrial commodity, the use of which increases at about the same rate as other basic commodities, the production must be sufficient to add 3.15 per cent to monetary stocks and take care of industrial demand. This normally requires a production equivalent to 5.6 per cent of monetary stocks. A five-year production of more than 5.6 per cent is followed by a rise in prices. A production which is less than this amount is followed by declining prices.

Since monetary stocks should be about 18 times production, an excess or deficiency in production has a slow effect on gold stocks. When prices are lagged 13 years, there is a close relationship between production and prices (Chart II). This lag is, of course, accidental. If

CHART II

PER CENT THE WORLD'S GOLD PRODUCTION IS OF MONETARY STOCKS COMPARED WITH COMMODITY PRICES IN THE UNITED STATES THIRTEEN YEARS LATER, 1845–1931
(1880–1914 = 100)



When gold production is high relative to monetary stocks, prices rise. Conversely, when production is low relative to monetary stocks, prices fall.

the gold supply were doubled in a single year, prices would double quickly. It happens that the rates of production have been such as to cause the 13-year lag.

World gold stocks are now about sufficient to support pre-war prices with the world back on a gold basis and gold used with pre-war efficiency. With monetary chaos, efficiency is not to be expected. Individuals, banks, and nations demand high reserves. If the price level were adjusted to the gold supply, the production is about sufficient to cause prices to decline one per cent per year.

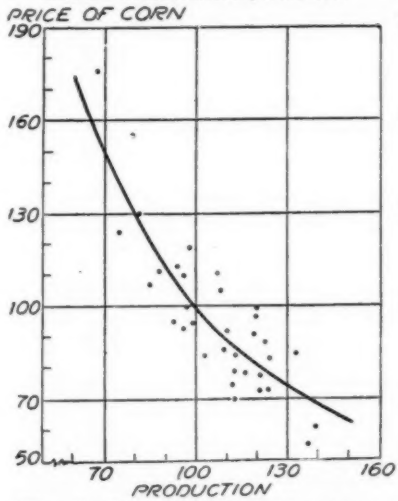
The relationship of the supply of gold to the purchasing power of

gold is practically the same as the relationship of the supply of corn, oats, wheat, or hay to their purchasing powers (Charts III and IV). That is, a 20-per cent shortage in supply increases the purchasing power about 25 per cent. This relationship if extended is a one to two relationship; that is, a halving of the supply would double the purchasing power, and a doubling of the supply reduces the purchasing power one-half.

The value of gold is determined by the supply of it and the demand

CHART III

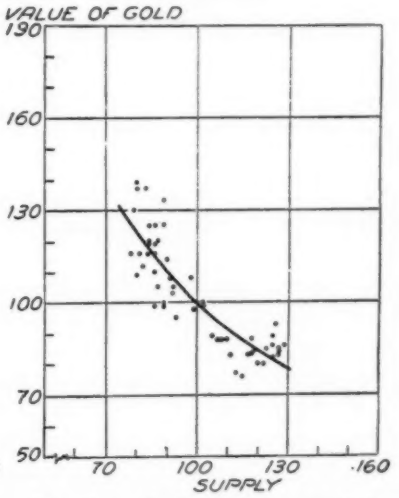
RELATION OF THE UNITED STATES PRODUCTION OF CORN TO THE PURCHASING POWER OF THE UNITED STATES FARM PRICE, 1875–1913



When the United States production of corn was 20 per cent below normal, the purchasing power of the United States farm price was 28 per cent above normal.

CHART IV

RELATION OF THE WORLD SUPPLY OF GOLD TO ITS PURCHASING POWER IN ENGLAND, 1850–1914



When the supply of gold was 20 per cent below normal, the value of gold was 23 per cent above normal.

for it. Over long periods of time, the supply is extremely variable. Demand was extremely variable in the Napoleonic War and World War periods. Price is fixed by law regardless of the supply of it or demand for it.

It is not sufficient to expand bank credit as rapidly as the production of commodities increases. It must expand more rapidly if prices are to be stable. For the United States, a 4 per cent increase in physical volume of production required a 5.5 per cent increase in credit for stable prices.

The problem to explain is why prices rose, not why they fell. The

reason why prices on a gold basis more than doubled from 1915 to 1920 was that most of the world stopped using gold and stopped bidding for it. This reduced the value of gold in the few markets that were open to it. The attempt to reestablish the gold standard—a process which was never completed—caused the frantic demand for gold. France returned to the gold basis in 1928, and the collapse came soon after. Many countries are now off the gold basis, but apparently will keep bidding for gold. If England should definitely demonetize gold, it would raise the price level in this country. Some temporary increase might occur without permanent abandonment. Our situation is such as would have occurred if the world had suddenly acquired a doubled supply of gold and after becoming adjusted to it, had lost the extra supply in two successive collapses.

CHART V

INDEX NUMBERS FOR BASIC COMMODITIES FOR THE UNITED STATES AND THE STATIST SAUERBECK INDEX FOR ENGLAND, 1929–1932
(1910–14 = 100)

Prices followed a similar course until England left the gold basis in September 1931. Since then, prices in England have been comparatively stable, but prices in the United States have continued to decline in almost direct proportion to the shrinkage in the gold value of the pound.

We have had one previous experience of a similar nature. The French Revolution broke out in 1789, and metal currency was abandoned. England also suspended metal payments in 1797. The United States continued on a metal basis until the War of 1812. Our prices rose 70 per cent from 1789 to 1796. The resulting prosperity and good will had much to do with the success of Washington's administration and the firm establishment of the Union.

England returned to the metal basis in 1821, and our prices on a metal basis fell 31 per cent from 1818 to 1821. Price chaos continued with a downward tendency.

Because of reduced demand for gold, our debt and tax structure before the Panic of 1929 was adjusted to a commodity price level 40 to 50 per cent above pre-war. The collapse has reduced property values so much that the debts are about equal to the national wealth and cannot be paid. The price level must be raised to the debt and tax level or the debt level must be lowered to the price level. There is

no alternative. This is a matter of grim reality that cannot be cured by psychology, confidence, or government lending.

We must choose between deflation and reflation. No country likes to change its monetary system, nor does any country like to go through wholesale bankruptcies and continue to have millions of unemployed. Our choice is not between two desirable things. It is between two undesirable things. Merely raising the well-known objections to either procedure does not commend the other. The question is: "Which is worse?"

If we wish to go through with deflation, we may as well proceed with the bankruptcies, foreclosures, and public defaults and get them over with. Merely postponing by lending some money or attempting to hold up the price of this or that thing, will accomplish very little.

Almost any nation can stand a 10-per cent deflation; and of course, no nation could stand a 90-per cent deflation. Somewhere between these, there is a limit for any country. There is considerable doubt as to whether a deflation process so drastic as that now undertaken can be carried through.

This is a very different problem from deflating after the Civil War when we were the only important country that was off the metal standard. Now we are the only important country that is attempting to maintain the pre-war weight of gold in its currency. In the first three years of the Panic of 1873, prices of all commodities dropped 18 per cent. In the first three years of this panic, prices dropped 30 per cent. The liquidation that must be gone through with is correspondingly greater.

For five years before the War, the average amount of monetary circulation plus bank deposits per dollar of gold in the United States was $11.23. From 1923 to 1927, this averaged $11.56. It reached $14.92 in 1920 and $14.13 in 1928. We know what happened in each case.

A gradual and slow increase in the amount of monetary circulation plus bank deposits per dollar of gold in the United States has been taking place for many years. There is no indication that the Federal Reserve system has speeded up this normal growth of circulation plus credit per dollar of gold. Whenever the normal is much exceeded, a reaction occurs.

Some persons believe that the Federal Reserve system is to blame for the decline in prices and that there is gold enough to maintain pre-deflation prices if credit were properly managed. The evidence indicates that a rise in the value of gold was inevitable with the return of the world-wide demand for it. Credit management might have prevented

a part of the stock market boom. No evidence has been found that credit management could have prevented a decline in commodity prices, or that the 1929 commodity prices can be restored by credit management and still maintain the present price of gold.

By the management of credit, it is possible to throw commodity prices out of line with gold by a limited amount. There is no indication that any permanent change in this relationship can be accomplished in this way. Over-expansion of credit brings on a reaction, and so does over-contraction of credit. The policy of the federal government in 1932 was based on the theory that prices could be raised by credit. The Reconstruction Finance Corporation lent money to many agencies in the expectation that credit expansion by the Reconstruction Finance Corporation and the Federal Reserve banks would raise prices and restore equities back of securities and start business activity. The policy did check contraction, at least temporarily; but only a rise in the price structure can stop bankruptcies and start employment. It is not possible to expand credit sufficiently to do this and still maintain the present price of gold.

Many persons whose studies have been limited to short-time credit have come to look upon gold as merely an interesting tradition. They think that any price level can be maintained by the proper handling of credit. If this were true, the gold standard would mean nothing. The limits of credit expansion with a given amount of gold are very definite. These limits are wide enough to allow credit expansion and contraction to be an important factor in business cycles. We are not dealing with a business cycle. To attempt to expand credit enough to restore the price level means making gold cheap. The only way that one nation can make gold cheap is to reduce the world demand for it. To assume that gold is going to be used with more than pre-war efficiency after a generation of chaos has no basis in recent experience nor in future probabilities.

Any means of restoring prices will probably require suspension of gold payments while the plan is being discussed. This has been done now by all other important countries except those that have already cut the weight of gold in their money.

This does not mean wild inflation. The only cases of wild inflation have come after government bankruptcy. During the American and French Revolutions, both countries inflated until the money was "not worth a Continental." Similar inflation occurred during the German Revolution and attempts to pay reparations. Russia is in a revolutionary period and has had violent inflation.

England suspended gold payments for 24 years in the Napoleonic

War period. She also suspended gold payments from 1914 to 1925 and now has suspended for more than a year. This makes a total of 36 out of 136 years off gold, but no case of wild inflation has occurred.

The United States has suspended gold payments four times, but even in the Civil War did not have wild inflation. Our average prices for the year 1864 were 193. Prices in England on a gold basis were 127. The worst inflation that has occurred since the Revolutionary War was on a gold basis in 1920, when prices averaged 226.

There is no danger of wild inflation except following revolution. If we should be forced to suspend gold payments, there is no cause for alarm.

After a country has suspended gold payments, it can establish any desired price level by the remonetization of silver, reduction of weight of gold in the monetary unit, managed currency, or compensated dollar.

The effects of rising prices are the same regardless of the cause. To illustrate these effects, let us assume that the value of the dollar was reduced one-third by definite abandonment of gold by other countries; by a sudden addition of 50 per cent to the world monetary stocks; by raising the price of gold by 50 per cent; or by suspension of the gold standard and sufficient expansion of currency and credit to raise prices by 50 per cent.

Innumerable charges that have not declined would not rise, but would be relieved of the necessity of declining. They are already adjusted to the price level that would be established. Among these are public and private debts, freight rates, telephone charges, and the like. Total tax payments would increase because taxes could be paid. Therefore public debts would be paid and tax rates would be lowered.

Ocean freight rates would not change materially. Therefore prices of products such as cotton and wheat at export points would rise a little more than 50 per cent. The following illustrations are based on prices for December, 1932. If wheat at New York rose from 64 to 96 cents, wheat in Nebraska would rise about 32 cents. There have been so many examples of just such a change that we can be sure of the effect on the Nebraska price. But this would more than double the Nebraska price. Corn at New York City would also increase about 50 per cent or about 21 cents per bushel. This would much more than double prices on Iowa farms.

The above changes would occur without any change in prices in foreign countries. The increased business which rising prices cause would result in still further price increases. These would be very decided increases for basic commodities.

Even with no improved prospects for business, prices of industrial

stocks would increase about 50 per cent. Prices of such stocks in London and New York keep on the same basis in ounces of gold. On December 15, 1932, 1.6 ounces of gold were required to buy a share of United States Steel stock in London, and 1.5 ounces were required in New York. On the same day, 0.73 ounces of gold were required to buy a share of Pennsylvania Railway stock in London and 0.71 ounces in New York. Of course, a rise in the price level would stimulate business and cause much more than a 50 per cent increase in security prices. A bale of cotton was worth 1.5 ounces of gold in New York and 1.8 ounces in England.

In general, those prices which have not declined would be relieved of the necessity of declining and prices of basic commodities far from market would rise most. These effects are the same as a rise in prices brought about by any other cause.

If this were accomplished by raising the price of gold, there would be one major difference—gold would also rise in price. Expectation of such a change would probably result in hoarding gold. It would, however, be much more profitable to hoard basic commodities such as lumber, cotton, corn, wheat, copper, and the like, at points far from market. It would also be more profitable to hoard common stocks than gold. With everything else at panic prices, gold would be one of the least profitable things to hold. If a change were made in the price of gold, it would probably be preceded by the suspension of gold payments as has been the case in most of the world, or would probably require the suspension of such payments while the subject was being discussed.

DISCUSSION: GOLD AND PRICES

By E. W. Kemmerer

With the broad assumption that, in a gold standard country, variations in the price level express changes in the value of gold and the value of goods, and that the value of gold in terms of goods is the resultant of the interaction of the forces of demand and supply, on gold and on goods, I am in full agreement.

There are two points in the paper which I wish to discuss, the first very briefly and the second a little more fully. The first is the claim that for seventy-five years before the World War, prices rose if the world's stock of monetary gold increased faster than the production of other things, and fell if gold increased less rapidly. The second is the claim that this relationship will continue to prevail in the future if the world continues on anything like the pre-war gold standard.

The period studied is from 1839 to the present time. However, during forty of these ninety-three years, the United States was on a bi-metallic standard or a paper money standard, not a gold standard. Moreover, the relationship under discussion between the world's stock of monetary gold and commodity prices has not held at all since 1914 either in England or the United States. The correlation, furthermore, in both countries was rather weak during most of the time between 1839 and 1873, except for a few years immediately after the Californian and Australian gold discoveries, when the movements of the price level were dominated by these enormous outpourings of new gold. It appears, therefore, that the correlation in question is significant chiefly for the period of falling prices from 1873 to the early nineties, and the subsequent period of rising prices from the early nineties to 1913. It is the generally accepted economic opinion today, I believe, that from 1873 to 1895 the decline in the price level in gold standard countries is to be explained chiefly on the ground that for about twenty years beginning with 1871 the world's previously high level of gold production was not maintained, while the demand for gold was greatly increased, chiefly by the world's shift during those years from bi-metallic and paper money standards to the gold standard. Few economists, likewise, would deny the claim that from about 1896 to 1913 the rapidly rising price level in gold standard countries is to be explained chiefly, not by increasing economies in the use of gold, but by the deluge of gold coming into the world's markets from the South African mines.

Aside from the discontinuance of bi-metallism in the world about 1873, and the return of the United States to the gold standard in 1879, there were few important changes in currency and banking practices in important gold standard countries between 1873 and 1913 of a character that would either greatly increase the world's demand for gold, or greatly decrease it through effecting important economies in the use of gold. Many countries, however, during this period substituted the gold standard for silver or paper money.

Since 1913, however, the situation has greatly changed. Enormous economies in the use of gold have developed, and I am inclined to believe will continue to develop during the years immediately before us, with the result that these economies since 1913 have been, and in the future will be, an exceedingly important factor in the situation—a much more important factor than were the economies in the use of gold that developed prior to 1913. I will merely mention the more important of these economies. They are:

(1) Gold coin which widely circulated in most gold standard countries prior to the World War has practically ceased to circulate.

(2) The gold exchange standard has taken the place of the gold coin standard in a great many countries. While it may be discontinued in some of the larger countries, its economies are so great that it almost certainly will be restored in the smaller countries, colonies and dependencies when the world again returns to a gold basis. A general idea of how great these economies may be is shown in the following illustration. Assume a South American country having a central bank which holds in the form of deposits the reserves of the commercial banks of the country. Assume a reserve requirement of 50 per cent. If the currency were on a gold coin or gold bullion basis, a reserve of $1,000 of gold would need to be held in the central bank's vault against a deposit of $2,000 of commercial bank funds. If, however, this central bank, with its 50 per cent reserve requirement were on a gold exchange standard basis, and were permitted to hold all of its legal reserves in the form of a deposit in a New York City national bank against which this New York national bank would keep the required reserve of 13 per cent, and if this 13 per cent were kept in the form of a deposit with the New York Federal Reserve Bank, against which that bank would be required to keep 35 per cent in lawful money, which we will assume to be gold; then the actual amount of gold held somewhere in support of these $2,000 of deposits in the foreign central bank would be $45.50 instead of $1,000 under the gold coin or gold bullion standard system. The reduction would be from 50 per cent to a little over 2¼ per cent. Of course this figure is not exact because in practice each bank in turn would keep more than the legal minimum reserve.

(3) The continually increasing establishment and development of central banks, of which the American federal reserve system, established in 1914, is the most important. The modern central bank is a great economizer of gold.

(4) The establishment of the Bank of International Settlements.

(5) The increasing custom of international clearing of gold, and of earmarking gold, thereby avoiding the tying up of so much gold as formerly in transit.

(6) The enormous increase in the use of checks throughout the world, even in the more backward countries. The efficiency of a gold dollar held in reserve in an American federal reserve bank is something like 40 times as great as that of the same dollar in hand-to-hand circulation.

I can find no evidence to support the conclusion that the world is today either experiencing or facing in the near future anything that can be called an enduring shortage in the supply of monetary gold.

The principal grounds for claiming that such a shortage exists today are three: (1) the increase in the value of gold since 1929 as evidenced

by the decline in the commodity price level in gold standard countries; (2) the fact that the world's gold production declined substantially during the years 1917–22, and that, although there has been a considerable recovery since that time, the world has only recently gotten back to the high production level of the period 1908–16; (3) the fact that the demand for gold increased greatly during the eleven years following the Armistice, chiefly as a result of the return of a large part of the world to the gold standard. Let us consider these reasons briefly.

The great decline in the commodity price level which we have had during the past three years came after a long period of comparatively stable commodity prices. If the world were suffering from a permanent scarcity of monetary gold, this scarcity would be likely to be felt in a slow and continuing decline in prices as it was in the period 1873–96, rather than in a catastrophic drop like the one we have recently had following a long period of comparatively stable prices. In this connection, it should be noted that the comparatively stable commodity price level in the United States from 1921 to the end of 1929 was a high level—averaging something like 41 per cent above that of 1913.

Although the world's gold production fell off considerably during the War, and the early post-war period, the world's supply of monetary gold has increased substantially and almost continually since 1913. The world's average annual production of gold for the 8 years ending 1913 was 21,514,000 ounces; for the 8 years ending 1921 it was 19,354,000 ounces and for the 8 years ending 1929 it was 18,660,000 ounces. The average for the last periods was only 11 per cent less than for the pre-war period—which was the greatest in the world's history—and the average for the three years 1930, 1931 and 1932 was approximately 22,300,000 or an amount about 3½ per cent more than the average annual production for the 8-year period of pre-war maximum. South Africa's gold production in 1931 was the largest in its history, and its production in 1932 was 6 per cent larger than it was in 1931. Because of the decline in the cost of cyanide, machinery and labor and of other elements in the cost of producing gold, production is being greatly stimulated in existing fields, while old fields once formerly discarded are being brought back into operation. An important new field has just been discovered in South Africa and a number of less important discoveries have been made recently in other sections of the world. Nearly every gold producing area of importance in the world is now showing substantially increased production. Estimates of a few years ago of a quickly approaching shortage in the world's stock of monetary gold have not been fulfilled. Kitchin's estimate of the world's gold production for the years 1931 and 1932, which was accepted by the Gold

Delegation of the League of Nations in its Interim Report of 1930, was $402 million for the year 1931. The production of that year, however, was actually $441 million. The estimate for 1932 was $410 million and the actual production for that year was $494 million.

Turning from the world's gold production to the growth of the world's supply of monetary gold, absolutely and relatively to the world's production of basic commodities, we find no evidence of an enduring scarcity of monetary gold. The Federal Reserve Board's estimate of the world's stock of monetary gold in the hands of central banks and governments at the end of 1921 was $8,023 million and at the end of 1929 it was $10,297 million. This represents an average annual increase (geometrical) of about 3.2 per cent. For the 19 years 1913–32 this world's stock of monetary gold increased 144 per cent, representing an average annual increase (geometrical) of about 4.8 per cent. The studies of Carl Snyder covering the principal commercial countries of the world for the period 1865 to 1914 show a rate of increase in the physical volume of production of basic commodities—tons, bushels, yards, etc.—of approximately 3.15 per cent a year. For the 16-year period from 1913–14 to 1929–30 the annual rate of increase of basic commodities was only 1.86 per cent, and, for the approximately 9 years from early 1921 to the end of 1929 it was 3.2 per cent.

Under normal conditions, there would be no need of the world's stock of monetary gold increasing as rapidly as the world's production of basic commodities or its physical volume of business, as we have pointed out, because of the continually increasing economies in the use of gold.

It may be reasonably concluded, therefore, that for the approximately 9-year period from April, 1921, to the end of 1929, during which commodity prices in the United States were fairly stable at a level averaging about 41 per cent about the pre-war level and during which the world's stock of monetary gold in central banks and government treasuries increased on an average by 3.2 per cent a year, and the world's production of basic commodities likewise increased on an average by about 3.2 per cent a year, there is no evidence that the world was suffering from what could be called an enduring scarcity of monetary gold.

While it is true that during the decade 1921 to 1930 many countries went over to the gold standard, nearly all of these countries or the areas they cover had been on the gold standard before the War, and their return to it did not represent an increased demand for gold as compared with the pre-war demand. Furthermore, as previously mentioned, a large number of these countries substituted the gold exchange standard and the gold bullion standard for the pre-war gold coin standard, with a resulting almost complete discontinuance of the hand-to-

hand circulation of gold coin throughout the world, thereby effecting very substantial economies in the use of gold. Moreover, contrary to all expectation, gold has recently been pouring into the world's markets from the hoards of India in large quantities. In recent years, India has absorbed normally something like $90 million worth of monetary gold each year. In the 14 months from October, 1931, through November of 1932, according to the *Federal Reserve Bulletin*, India threw on to the world market $265 million worth of gold. In other words, for these 14 months, India, instead of absorbing from the world's markets upwards of 25 per cent of the gold produced, has been throwing into these markets the equivalent of about 45 per cent. Recent estimates of India's stock of gold vary from $2,500 million to $3,000 million. From the year 1873 to 1930, India's net recorded imports of gold totalled $2,800 million. The *London Times* of December 18 reports that in Britain's recent great gold-selling rush, that began a year ago, about $68 million of gold was sold to the Bank of England, half of this amount coming from jewelry and scrap metal. Since the outbreak of the World War, Russia has poured over $600 million of monetary gold into the rest of the world.

During the last few years, there has been a decided decrease in the amount of new gold absorbed in industry and the arts. When the price level in gold standard countries falls, the prices of jewelry and ornaments in which the cost of gold itself bulks large tend to remain high as compared to the prices of other goods. This fact, together with the business inactivity and economic hardship which usually accompany a period of rapidly falling prices tends greatly to reduce the demand for gold for ornamental purposes during such periods. Referring to the industrial demand for gold, the *Federal Reserve Bulletin* of October, 1932, said: "There have been times within the last 20 years when the net industrial consumption of gold, according to accepted estimates, has exceeded $100,000,000 per year, but it has remained below that figure since 1921, and averaged about $70,000,000 to $80,000,000 during the period 1924–1929. In 1930 the net industrial consumption decreased to about $50 million." The United States normally consumes more gold in the arts than any other country. Its consumption of new material in the manufactures and the arts declined from $25 million in 1929 to $6 million in 1931. Apparently the world's net demand for gold in the industrial arts for 1932 will be found to have been exceedingly small.

In 1924 the United States had considerably more monetary gold than Europe. Today Europe has over twice as much as the United States. Much of the gold today in Europe, as well as in other countries, is lying

idle in the vaults of central banks of countries that are not on the gold standard. Much gold is being hoarded. Enormous quantities of gold are in the vaults of central banks like the Bank of France and the Federal Reserve Banks of the United States, supporting credit which is either not moving at all or moving very slowly. Probably over 90 per cent of American business is performed by means of bank checks, which represent the circulation of so-called deposit currency. If we compare the figures showing the velocity at which our bank deposits circulated in the fall of 1929 with those at which they circulate today, we will see one very important reason why gold appears to be scarce. The average annual rate of deposit turnover for the month of October, 1929, in New York City was 132.7, and for the month of November, 1932, it was 22.3, about one-sixth as much. For the other 140 cities of the United States for which figures are available the drop was from 46.5 in October, 1929, to 26.3 in November of this year. Deposits that are not moving are very similar to money that is hoarded. The people who have them are afraid to use them. When confidence is again restored and bank deposits again move at their normal rate, we shall find, I believe, that the world has an ample supply of gold. Moreover, when money and bank deposits again move normally, if a considerable part of the world continues off the gold standard, we may find ourselves suffering from an excessive gold supply and rapidly rising prices.

IS THE AMERICAN FAMILY SOLVENT?

By M. R. Neifeld

Credit for the average man is so recent a phenomenon that it has hardly been recognized, much less fully accepted as respectable. Yet increased concentration of population into industrial areas, more delicate integration of the whole industrial process, and greater dependence on the flow of money income have brought about conditions that have accelerated the use of credit by individuals and families. Opportunities in uncharted fields have arisen as a challenge to business enterprise. New specialized agencies have accepted the challenge, and they extend to families open-account credit, instalment credit and various forms of cash credit.

Banker and economist have been unaware or incredulous of the need for these agencies, and the moralist has been skeptical of the ability of the average man to handle his personal credit wisely. Though our industrial civilization is founded on credit, it is dominated by ideas that arose in the simpler economic structure when the problems of production were insistent. Accordingly, we have come to look upon the granting of credit for production purposes as conforming to the canons of moral rectitude; while, at the same time, we have been filled with puritanical doubt about the propriety of so-called "consumer" credit. Misgivings about financing the consumer have led to fear that the process would end by consuming the financier.

Disregarding other important aspects, I would like to take a moment to point out that the whole superstructure of individual and family credit has been built on a foundation of surplus wage. The multifarious activities, opportunities and pleasures of modern life, have provided individuals with the possibility of living a fuller life to a degree hitherto unknown; but, at the same time, they have introduced an instability the like of which has never been. And the instability is intensified by the quickened tempo with which things move; news arrives; styles, fashions and fads change; improvements multiply; and difficulties of adjustment arise. On a subsistence wage, family credit, other than for the sheer necessities of life, is impossible. Only on a surplus wage base could have been built the whole structure of credit for the conveniences and luxuries of life as we know them.

I assume that by the American Family we mean, loosely, in round numbers, the 30 million households that form the social and economic entities which make up our civilization. These families can be classi-

fied into levels or strata of economic possessions and powers that range from the extremes of poverty to the extremes of wealth.

If, then, we mean to investigate the solvency of the American Family we have a choice of possible families. We might consider the industrial group that depends on wage and salary. This group has borne the brunt of the breakdown in industrial activity. We might consider the group of farm families. This group has suffered from the disproportion of prices for agricultural and other commodities. Or, we might consider other sub-groups selected for particular reasons. Any of these more obvious sub-classifications may be treated with profit, but as an introduction to the subject we will confine this discussion to the group made up of the aggregate of all families. It will be easiest to take the last because we will find available records and statistics that will be of help. In taking the aggregate of families, however, we will hide the extremes, which from the human standpoint are most significant. Dealing with aggregates we will be subject to all the usual statistical limitations and inadequacies.

Solvency is a relative term used in a general appraisement of a state of financial condition as disclosed by true and correct financial statements or balance sheets. A primary consideration is that assets exceed liabilities. A distinction is sometimes made between Business Solvency and Financial Solvency. Business Solvency is defined as a condition which exists when the total assets exceed the total liabilities, as distinguished from Financial Solvency—the condition in which current assets are in excess of current liabilities.

A word must be said at this point about balance sheet values. A balance sheet item may be valued from either a going-concern point of view, or, from a liquidating point of view. In one sense balance sheets of active companies are all on a going-concern basis. If liquidation became the paramount issue the value of items that enter into the going-concern balance sheet would be substantially changed. Take the balance sheet of a successful railroad and consider what would happen to the entries for trackage, cars, engines, and other equipment, if all this material had to be valued for what it would bring at a forced sale. There is always a tremendous difference between values of a going-concern and the values of the same concern in liquidation. I do not have time here to enter into a discussion of appraised value, cost or market value, realizable value, or of the philosophical questions that might be raised about the meaning of our balance sheet; but I would like to emphasize the importance of this concept of a going-concern.

From this point of view the question of solvency resolves itself into,

"Are there sufficient funds on hand, or will they be provided in time, to take care of obligations which exist or which may arise?" Any enterprise, including the family, may be considered from the same point of view. Only in the converse case of insolvency is there any distinction between a family and a business. In the worst cases of insolvency, namely, those involving resort to bankruptcy proceedings, the law does allow an individual to retain for himself and his family certain chattels while it does not allow any such exemption to a business organization. This is not a distinction in applying the term "solvency" but merely recognition of a difference in the needs of a human being who must continue to live, and the needs of an artificial entity that may be eliminated.

In the analysis of solvency as a satisfactory state of current operating, fixed assets may be totally disregarded. So may fixed obligations, except as they intrude themselves and disturb the relation between current items. One error of recent financial management has been the treatment of some items of demand indebtedness, and hence essentially of current indebtedness, as if they were items of fixed indebtedness; and one expedient to mitigate the force of the depression is to defer large items of current indebtedness to some point in the future when, it is hoped, a more satisfactory relationship between income and outgo will permit effective coping with the deferred items. The adjustment of fixed indebtedness all of which suddenly becomes currently due because of the inability to take care of that smaller portion which matures, is another of the major problems when the ordinary conventions of debtor-creditor relationships become inadequate. In a depression, the usual procedures for refunding or piece-meal amortization of debts break down.

To return to the family. The question of solvency can have meaning only when it refers to the family as a going-concern. To illustrate: the household effects of a particular family might bring $150 at a forced sale. But that realizable value is not the one that the family would place on its possessions. For its purpose as a going-concern the value may be $1,000 or more.

With this lengthy introduction I turn directly to an estimated balance sheet of all the Families in America (Table I). This differs from the national balance sheet in leaving out all items of public wealth. The figures are given as of December 31, 1929, because that date is the latest for which most of the information is available.

In 1929 the families of America had total current assets in excess of 208 billion dollars and more than 213 billion dollars of total fixed assets. The combined total of gross assets exceeded 421 billion dollars. Di-

vided equally among all the families of the country, there would have been to the credit of each roughly $14,000 in gross assets.

TABLE I

ESTIMATED BALANCE SHEET OF FAMILIES IN AMERICA

30,000,000 Families

As of December 31, 1929

(000,000 omitted)

ASSETS			
Current assets:			
Cash:			
Money in circulation			$3,000
Savings in banks			28,257
Minor savings			262
Total cash			$31,519
Investments:			
Investments in stocks, bonds, etc.		$150,000	
Building and loan associations		8,695	
Life insurance (cash sur. val.)		17,204	
Property, casualty insurance		1,059	
Total investments			176,958
Total current assets			$208,477
Fixed assets:			
Real estate:			
Urban:			
Small town houses	$42,000		
Large town houses	55,000		
Rural:			
Farm land	35,000		
Farm buildings	13,000		
Total real estate		$145,000	
House furnishings		50,000	
Motor vehicles		7,600	
Miscellaneous:			
Farm implements	$3,302		
Live stock	6,000		
Artisan tools	200		
Yachts and motor boats	500		
Cupboard inventories and fuel in bin	600		
Total miscellaneous		10,602	
Total fixed assets			213,202
Total assets			$421,679
LIABILITIES AND NET WORTH			
Current liabilities:			
Notes payable:			
Instalment paper			$2,500
Short term cash credit			2,631
Life insurance policy loans			2,379
Total notes payable			$7,510
Open accounts payable			3,500
Miscellaneous (Intra-family loans)			800
Total current liabilities			$11,810
Fixed liabilities:			
First mortgages on urban real estate		$22,600	
Second mortgages on urban real estate		2,750	
Mortgages on farm property		9,200	
Total fixed liabilities			34,550
Total liabilities			$46,360
Net worth			375,319
Total liabilities and net worth			$421,679

From *The Personal Finance Business*, by M. R. Neifeld, Harper and Brothers, N. Y., 1933.

The total current liabilities were under 12 billion dollars and the total fixed liabilities were about 34.5 billion dollars. The difference between all the liabilities and all the assets, or the net worth, was greater than 375 billion dollars. The average net worth exceeded $12,000 for each family.

When compared with the accounting ratios customarily determined for corporate financial statements, the computations for items on the two sides of this balance sheet yield satisfactory results for current and for fixed items. The ratio of financial solvency (current assets to current liabilities) is 18 to 1; the ratio of fixed assets to fixed liabilities is 6 to 1. Cash assets of 31.5 billion assured satisfactory current operating by the ability to pay current liabilities just about three times. Current liabilities were one-fourth of total liabilities and the total of liabilities was approximately one-ninth of gross assets. In other words, for every dollar the American people owed they had the equivalent of nine in their possession. To put it another way, net worth was equal to eight times total liabilities. Cash assets alone were almost sufficient to pay off fixed indebtedness.

These figures give the answer to the question, "Was the American Family Solvent at the end of 1929?" The balance sheet meets the test of business solvency, of financial solvency, and of current operating. From the liability side of the balance sheet, small comfort can be drawn by the prophets of disaster who bewailed the imminent bankruptcy of John Doe's family. At the peak of the "New Era" open account credit, instalment purchases and the newer forms of cash-credit were safely subordinated to assets and to the requirements of current operating.

Collateral information reinforces the conclusion of the balance sheet. During the last two decades while consumer credit has been having its most vigorous growth, there has been more than equal growth in the items which represent the major cash savings of the American Family.

INCREASE IN MAJOR ITEMS OF FAMILY SAVINGS, 1910–1929

(000,000 omitted)

	1910	*1929*
Population	92	122
Income	$31,000	$82,000
Cash Savings in Banks	6,835	28,218
Equities in Insurance Policies (net)	2,863	13,730
Equities in Building and Loan Associations	863	8,066
	$10,561	$50,014

As population increased by one-third from 1910 to 1929 and income in current dollars three-fold, cash savings in banks increased four-fold; equities in insurance policies five-fold, and equities in Building and Loan Associations nine times. These increases, amounting to 40.5 billion, in the major items of savings speak well for the economic sanity of the American Family.

The question of great moment is what has happened to the balance sheet in the last three years. I do not have available all the data by which to replace the 1929 statement by one of a later date, but I can indicate some of the changes that have occurred.

Certain data for 1932 are presented in Table II together with corresponding amounts in 1929:

TABLE II

ASSET ITEMS

(000,000 omitted)

	1929	1932	Difference
Current assets:			
Cash:			
Money in circulation	$3,947	$4,800*	$853
Savings in banks	28,257	24,281	−3,976
Minor savings	262	210	− 52
Total cash	$32,466	$29,291	$ −3,175

LIABILITY ITEMS

(000,000 omitted)

	1929	1932	Difference
Current liabilities:			
Notes payable:			
Instalment paper‡	$2,690	$1,850†	$— 840
Short term cash credit	2,631	4,900	2,269
Life insurance policy loans	2,379	3,500	1,121
Total notes payable	$7,700	$10,250	$2,550
Open accounts payable‡	2,280	1,500	— 780
Miscellaneous (intra-family loans)	800	3,000	2,200
Total current liabilities	$10,780	$14,750	$3,970

* June 30, 1932, estimate.
† Includes increase of 1.2 billion in adjusted service certificates and 850 million in small loans by banks.
‡ Estimate of John Guernsey in charge Retail Survey, Department of Commerce.

On the asset side, cash has decreased by 3.2 billion. This change is made up of a loss of 4 billion in savings deposits and of an increase of 800 million in money in circulation. On the liability side an increase of 4 billion is composed of increases of 2.3 billion in short term cash credit, 1.1 billion in policy loans, 2.2 billion in intra-family loans, and

of decreases of 800 million in instalment paper and of 800 million in open accounts payable.

In the 1929 balance sheet, the entries for instalment and open account credit represent the maximum voluntarily contracted. The decrease of 1.6 billion in these two items in 1932 represents repayments and decreases in volume. The most important cause for the increase of cash credit is an expansion of 1.3 billions in loans on veterans' certificates.

Decreases in savings deposits and the increases in loans on policies and on adjusted compensation certificates, represent distressed liquidation of assets. Decreases in open accounts and instalment paper represent positive adjustments through contraction of liabilities. The detailed figures for the newer forms of cash credit show the same trend. The only important exception is an increase in small loans by banks, but even that represents merely a statistical refinement of classification.

After all the changes are balanced, cash assets alone are still equal to twice current liabilities. Furthermore, while some of the items such as policy loans, and veterans' loans are listed as liabilities, they are not urgent because there is no compulsion to repay. The same is true of most of the intra-family loans.

There have been serious changes in the items of the balance sheet. I have ignored altogether their effect on the standards of living of many families. I have disregarded what has happened to values of real and personal property. I have neglected the human elements that make for happiness or sorrow. I have confined discussion to a statistical portrait of assets and liabilities of the aggregate of all families in the United States.

COMMERCIAL FAILURES

By Stephen I. Miller

The doctrine of liberty applied to business is successful only to the extent that it is flanked by economic intelligence. Liberty to establish a business, to borrow capital, to hire labor, to develop markets, to determine sale prices and credit terms, is of vast economic concern and responsibility, not only to the individual but also to the entire United States. This liberty, generating unlimited human initiative, has found an unparalleled development in mechanical science. The application of machinery to industry has come down through the past with growing intensity. The spread of technical industrial progress, with its resultant changes in business organization, has outstripped the power of the average business man to realize existing inherent economies. But this fact does not deter business ambition from opening another grocery store or factory. The result is a heavy casualty list in business.

When one considers business failures as a percentage of the total number of business concerns, there appears to be little cause for much anxiety. The highest percentage ever reached was in 1878 when commercial failures amounted to 1.55 per cent of the total number of business units. In that year there were 10,478 failures, and 674,741 business concerns. The lowest percentage was .38 of 1 per cent in 1919 when the total number of failures amounted to 6,451, and the total number of business concerns amounted to 1,710,909. The fact that each year, on the average, only one in about every 100 business concerns fail, would seem to be a low price for industrial progress. This is probably a better showing than is made by college graduates who go into the professions of law, engineering and teaching.

For the past 66 years the annual average number of commercial failures was 12,300. As might be anticipated, there are periods which follow fairly well the conditions of American business. From 1873 to 1878 the percentage of failures to the total number of business concerns ran high due to the severe depression of 1873; from 1883 to 1898, a 16-year period, failures continued at a high average as a result of a sustained low business pressure; in 1908 and from 1912 to 1916 will be found another high area resulting from a depression and the War. Coming closer to present-day conditions, and reviewing the past 11 years 1921–31, we find that the average annual number of commercial failures is at a high level amounting to 22,750. This last period was one of high-geared industry and keen competition which overlapped into the present major business recession.

For the past 10 years, 1922–31, there has been an annual average of 5,664 commercial failures in manufacturing, and 16,134 in trading and merchandising. At the very top of the merchandising list will be found groceries and meats, with average failures for the past 10 years amounting to 3,430. Next to this category will be found the textile group comprising clothing, furnishings, dry goods and carpets, with average yearly failures of 3,345. Commercial failures in the grocery and textile group combined, equalled more than 40 per cent of all merchandising failures.

The fact that there are three times as many failures in the distribution of commodities as in their production, is in no way unexpected, for it is much easier to open a store than to set up a factory. This is true from the point of view of the capital required, and also from the point of view of the necessary experience. It is also true that there are more "novices" in merchandising than in production. The man who opens a plant is generally fairly well acquainted with the problems of production. As a rule he has been in touch with the particular industry for many years. On the other hand, the country seems to be filled with people who believe that they can become good "merchants." Another reason for the greater number of distributors, is to be found in the competition on the part of manufacturers and wholesalers to create new outlets.

Commercial failures result in heavy losses to creditors. For the past 11 years the liabilities of such failures have averaged more than 500 million dollars per year. There is no way of knowing just how great this loss has been. We do know that creditors received 6.70 cents on the dollar in bankruptcy cases, concluded during the fiscal year ending June 30, 1931, while during the previous fiscal year they received 8.68 cents on the dollar. However, this salvage is low, due to the large number of "no asset" cases of wage earners. Undoubtedly the returns from commercial failures are larger, much depending upon the type of settlement. A conservative estimate of creditors' losses for strictly commercial failures during the past 11 years would be an average of four hundred million dollars per year. This elimination largely represents the toll for business mismanagement and competition. It is the result of the lack of working capital, lack of experience, the extension of careless credits and competitive prices. It is the death tide of business, carrying out a waste that increases the cost of producing and distributing commodities.

Considering larger and smaller commercial failures, one finds that from 1921–31 there was an annual average of 770 concerns with liabilities of more than $100,000, while for the same period there was an

annual average of 21,973 concerns with liabilities of less than $100,000. The smaller outnumbered the larger almost 29 to 1. From 1896 to 1920, the smaller outnumbered the larger 50 to 1. It is evident that during the past 11 years, as compared to the previous 25-year period, the ratio of small to large failures has decreased about 40 per cent.

The total liabilities of the larger failures have been about equal to the smaller for the past 36 years. However, the average liabilities per small failure increased from $7,593 for the period 1896–1920, to $12,098 for the period 1921–31; the average liabilities per large failure in the period 1896–1920 was $331,477 and for the period 1921–31, $372,564.

In 1866 there were 160,000 business concerns in the United States. In 1931 there were 2,125,000. This represents a growth of 1300 per cent in a 66-year period. The average yearly increase has been about 30,000.

Choosing a profession or vocation has been looked upon in the United States as one of the essential American liberties. It is an important part of the "pursuit of happiness." It is the answer to the question that challenges every boy and many men "What are you going to be in life?" The answer to the question is to be found in the accessibility of the professions and vocations. Restriction impedes the flow of new blood from the farm, the village, and even from the back street of the city that will energize worn out leadership. Restriction breaks down equality of opportunity.

However, in practically every country it has become necessary to throw some safeguard around professional and vocational choice. The reasons for this modification of liberty are generally found in public policy, public safety and even in expediency. In medicine, law, engineering, architecture, education, and the ministry will be found definite requirements in terms of preparation and education, and in most of these professions the preparation has been doubled during the past 50 years. Such a hardening of requirements has been hailed by the public as a protection, notwithstanding the fact that it has placed a handicap upon students who do not have the necessary funds for a long educational preparation.

Except for the granting of charters to banks and corporations, franchises to railroads and utilities, certification to public accountants, and for apprenticeships in some trades, the business field has a wide open approach. No one will put a single obstacle in the way of a man who wants to bring more land under cultivation, open a mine, manufacture a product, or merchandise a commodity. Ninety per cent of the different types of business are open to all comers. Neither the

lack of working capital nor the lack of experience will deter the individual from opening another grocery store or factory.

When liberty to enter upon business is practically unlimited, when standards of living are so high as to permit the accumulation of investment capital, and when ambition is highly democratized, one can expect that the birth rate of business concerns will be high. And when the birth rate is high there is likely to be a high death rate.

There are two ways of getting out of business, one by turning over the assets for the benefit of creditors, the other by paying all debts and closing the doors. The former is a commercial failure, the latter a voluntary withdrawal. From a broad business point of view both classes are failures; the one waited until things became hopelessly involved, until liabilities were greater than assets, while the other, with few exceptions, seeing that success was hopeless, paid his debts and closed shop. However, the latter is not considered a business failure in the technical sense. Such are not included in the above figures. They are just voluntary withdrawals who come and go quietly, and for whom there has been little economic interest or concern.

There has never been a careful compilation of the number of business concerns that voluntarily withdraw each year, but some fragmentary research indicates that for the past 10 years there have been 7 voluntary withdrawals for every commercial failure. In so far as the past 10 years have been highly competitive, let it be assumed that the average yearly voluntary withdrawals for the past 66 years have amounted to five times the average annual commercial failures. The average yearly failures, exclusive of banking and farming, have been 12,300 which multiplied by 5 gives us an average annual voluntary withdrawal of 61,500 business concerns.

Now we are in a position to approximate the total and annual birth rate and death rate of business from 1866 to 1931. The formula for the death rate will be the average yearly commercial failures plus the average yearly voluntary withdrawals, that is, 12,300 plus 61,500 or 73,800; the formula for the birth rate will be the average yearly increase plus the average yearly commercial failures, plus the average yearly voluntary withdrawals, that is, 30,000 plus 12,300, plus 61,500 or 103,800.

For the past 11 years, 1921 to 1931, one finds that the average annual commercial failures amounted to 22,750; that average yearly voluntary withdrawals amounted to about 159,000; that the average yearly growth of business concerns was 18,000. It is evident that failures and voluntary withdrawals have multiplied, while the increase in the number of business concerns has slowed up greatly.

This annual decimation in the ranks of business in the past 11 years has averaged 159,000 per year. These are the voluntary business withdrawals. In practically every square block of every American city the familiar sign "Going out of business" is in evidence. In so far as these withdrawals do not leave a trail of bad debts, they have remained unnoticed. However, from the point of view of the individual who has retired, there has been a definite loss in terms of investment capital and labor. Just how much this would amount to for the 159,000 withdrawals is beyond the knowledge of anyone. There will be loss in plant, fixtures, machinery, materials and finished products, and loss of time, all depending upon the type of business, and the number of months or years that the business has been struggling against the inevitable end. Probably no one would find any fault with an estimated average loss of $1,000 for each retired business unit. Upon this basis the loss would be 159 million for each of the past 11 years. But this sum does not begin to cover the total waste. To a very great extent these voluntary withdrawals are the cause of commercial failures. This is particularly true when large stocks of merchandise are thrown upon the market at ruinous prices. More important is the waste attributable to this heavy turnover of business concerns.

If, on the average for each of the past 11 years, there have been 22,750 commercial failures, and 159,000 voluntary withdrawals, then for each of these years there must have been 181,750 new business concerns to fill the gap. However, for this period there was an average yearly increase of 18,000 businesses which meant that each year almost 200,000 new concerns came into existence. These are the "vital statistics" of business, sometimes called the business turnover.

For a long time in production there has been a development toward large units, mass output and low unit cost. This is by no means true of merchandising. In recent years there has been a well defined movement toward larger scale distribution, but on the whole there still remains high unit cost of merchandising, and low unit cost in production. In this condition is to be found the reason for overproduction on the one hand, and one of the reasons for underconsumption on the other. This conclusion is made clearer when one asks "What would happen to the cost of merchandising if one-half of the retailers and wholesalers were to withdraw from the business field?" The answer is "If the withdrawing units represented one-half of the total volume passing through the hands of retailers and wholesalers, the average amount of business done by the remaining retailers and wholesalers would be doubled."

Just how much saving would be accomplished by doubling the quan-

tity retailed and wholesaled is beyond estimate. In so far as the cost of wholesaling has been estimated from 10 to 15 per cent, and of retailing from 20 to 25 per cent, of the dollar volume distributed, and in so far as the total amount retailed fluctuates from 35 to 55 billion annually, even a small percentage saved as the result of doubling the average amount merchandised on the part of a reduced number of distributors, could easily amount to a billion dollars per year. All this waste is the result of diluting the volume of commodities that pass through an unnecessary and uneconomic number of outlets.

It is conservative to say that the heavy business birth rate, and naturally heavy death rate are costing the American people an annual loss of anywhere from one and one-half to two billion dollars. It is a heavy cost, particularly to the consumer, and must be recognized as an important contribution to the maladjustment of production and demand.

DISCUSSION

By W. H. Steiner

In recent years, the importance of the problem of commercial failures has been increasingly recognized. Public interest has been manifest in several channels. Creditors immediately concerned with the problem have sought to revise the Federal Bankruptcy Act, so as to increase their woefully small recoveries from bankrupt estates. They have also set up, as an alternative to legal process, machinery for the informal handling of the affairs of embarrassed debtors. The United States Department of Commerce, in coöperation with several leading universities, has grappled with a more fundamental phase of the problem in studies of the causes of failure as ascertained by examination of the affairs of selected bankrupts.

Dr. Miller's paper is a worthy addition to the growing body of scientific literature dealing with the problem. Drawing on the records of one of the great mercantile agencies which have long gathered statistics of commercial failures, he endeavors to interpret these figures. The paper is particularly welcome because it lays bare the questions which are at the root of the failure problem—questions of which account must be taken in any formulation of public and business policy to deal with the problem. I refer to the matter of the future composition of the American business community. In his discussion of the broader problem, Dr. Miller has opened many interesting and suggestive phases, which merit further scientific study.

The changes of the past decade have puzzled many of us. To what extent does withdrawal from business during the period reflect long run

or secular change arising from factors such as the integration of industry, and to what extent cyclical and post war adjustment? Is our old individualism rapidly passing in the natural course of events? As Carl Snyder showed some years ago, growth in the number of failures has tended to keep pace, making due allowance for cyclical change, with population and with the number of concerns in business, while liabilities have shown a marked tendency to decline in relation to the volume of business as measured by clearings. This progressive stabilization in the business community has been due, he believed, to integration and to decline in the degree of experimentation in business. Dr. Miller, however, notes a tendency during the past decade for large failures to become relatively more important, which Snyder already perceived. The evidence, based on failures with liabilities of less than $100,000, as compared with those showing liabilities of a greater amount, is, I believe, but partial, especially in view of price changes over the years. I feel that the question affords distinct opportunities for further study.

Dr. Miller has rendered a real service in calling attention to the importance of voluntary withdrawals from business and the loss that they involve. Failures tell only part of the story. A high birth rate and the accompanying high death rate resulting from misguided effort, have exacted a heavy toll. What this may be, no one knows precisely, and I would suggest that the great organization with which he is connected consider seriously the practical problems involved in the compilation of such figures. In that way, we may learn the direct price which we pay for giving all the opportunity of entering business freely, as they wish. To them must be added the indirect costs, through disorganization of markets when stocks of goods are sacrificed at ruinous prices, as well as from inefficiencies of small units which are encouraged to open their doors and "try their hand."

Against the counts of the indictment that we have just drawn up, there is one indisputable feature that may be advanced. Our system of social liberty and individual opportunity has resulted in the rapid development of the country. This has gone far to offset and to compensate for the losses that it brought. But, looking forward instead of backward, is it likely that our economic pace will be as rapid in future as it has been? If progress is at a less rapid rate, does this not call for greater caution in credit granting, and a lessening of business mortality? We can hardly pay indefinitely the huge costs that it involves. This means, speaking practically, that credit grantors, both bank and mercantile, should consciously face the problem, and from a long range view. Today, it is true, they can do but little, in view of the pressure on the part of business men for sales. But they can plan for a more auspicious future.

THE USE OF CENSUS TRACTS IN ANALYZING THE POPULATION OF A METROPOLITAN COMMUNITY

By Howard Whipple Green, *Cleveland Health Council*

The characteristics of the population of each section of a dozen of our largest cities have been made known by census tracts.[1]

My Cleveland studies based on census tract data demonstrate that the greater city which in the past has been considered as a single statistical unit of over a million people is anything but uniform, and that each of its constituent parts must be studied by the public health worker, the social worker, the city planner, the educator, the public utility operator, the banker, the retailer, and the merchandiser of all sorts of goods.

The distribution of the total population of Cleveland is not uniform; there are 104 persons per net acre in one section and less than one to the acre in other sections.

The population of Cleveland has increased during each decade for the past 100 years. During the last decade the population of the city increased 12 per cent. This increase was not uniform—certain sections decreased while other sections increased enormously. Over one-third, 37 per cent, of the area of the city of 1920 decreased 18 per cent during the past decade, and one census tract decreased during the past 20 years from 6,114 to 49 persons while another increased from 59 to 10,577. (Chart I.)

The Negro population has increased—in fact, more than doubled—during the decade 1920 to 1930. One census tract with 8.7 per cent of its population Negroes increased to 90.6 per cent Negro, or from 393 Negroes to 3,150, while other census tracts decreased numerically.

The several foreign-born groups each cluster about a different area or different areas of the city.

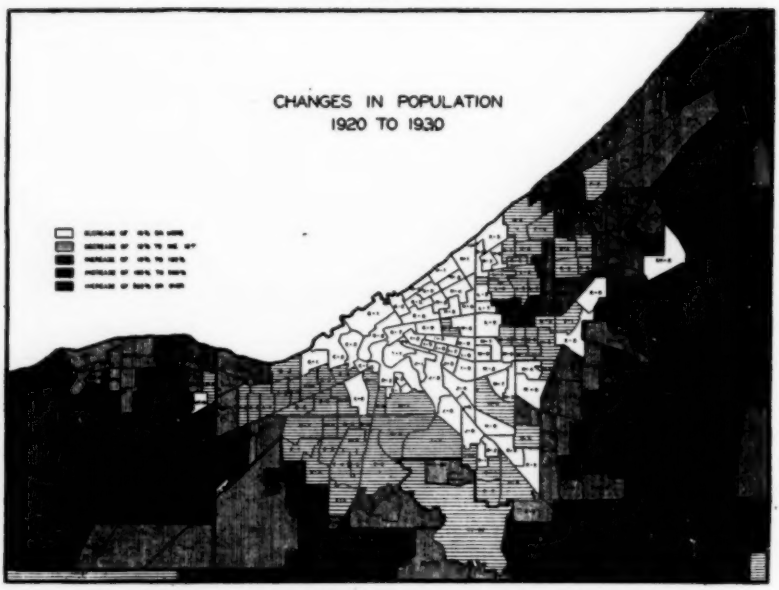
A total tuberculosis death-rate of 81 per 100,000 population is of but passing interest to the public health executive, but a rate of 127 per 100,000 white population in one section of Greater Cleveland compared to but 19 in another section is very pertinent.

The fact that in 1931, 7.2 per cent of the families of Greater Cleveland were given material relief by the family case working agencies is of passing interest to the social worker, but the fact that in one section 43.7 per cent were given this service is startling.

The equivalent monthly rental for each census tract made possible by the 1930 census through the publication of monthly rentals in ten

[1] The census tract is a constant geographical area used by the Bureau of the Census in enumerating the population of certain of the largest cities in the United States.

CHART I



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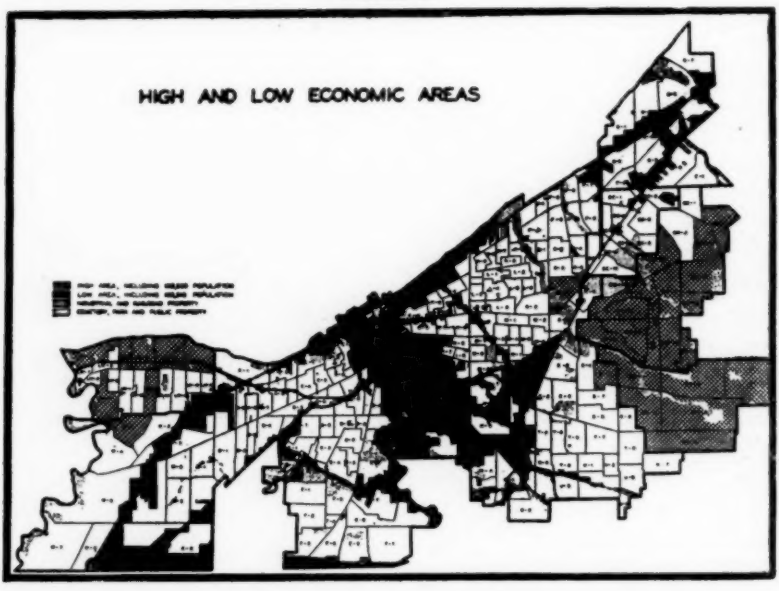
groups and values of homes owned in ten groups makes available a whole new series of studies. Chart II presents this analysis by high

CHART II



and low areas. The classification of the families by the race and nativity of the family heads in each census tract allows for another interesting series of studies.

A variation in the infant mortality rate of from 110 in those census tracts with an equivalent monthly rental between $10.00 and $14.99 to 26 in those census tracts with an equivalent monthly rental of $100.00 and over makes it possible to evaluate more properly the public health work in the field of infant welfare. (Chart III.) The health officer in the first area successful in maintaining a rate of 90 infant deaths per 1,000 births where 110 is normal is evidently much more successful than the health officer in the second area if his rate should be only one-third

CHART III

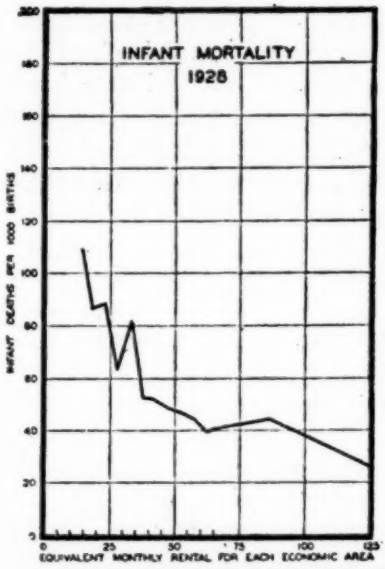
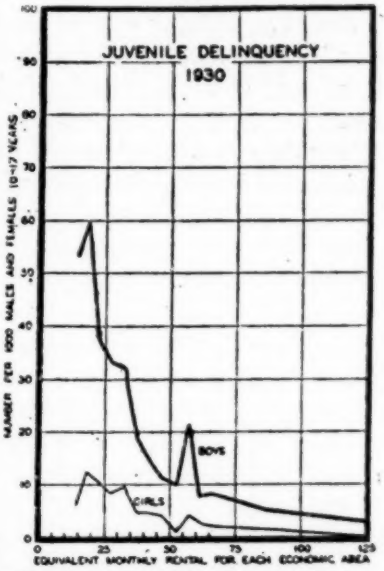


CHART IV



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of 90 or 30 where 26 is normal. However, only two years ago the unanimous opinion would have been that the man with a rate of 30 was doing an excellent job, while the man with a rate of 90 was almost condemnable. It was little realized that the 90 rate was attained in an economic area where a rate of more than 100 should have been expected, and that the rate of 30 was in an economic area where a rate of well under 30 should have been expected.

The interpretation of racial and nationality characteristics was impossible without economic status and the characteristics of family heads.

The question, "Do infants born in Poland suffer unduly high infant

mortality rates?" was hard to answer correctly in the past. The City of Cleveland in 1931 showed a total rate of 53.2 infant deaths per 1,000 births, but for those born to Polish mothers (mothers born in Poland) the rate was 76.1 and of those to white mothers born in the United States with parents born in the United States, the rate was but 49.3.

One would say unhesitatingly yes—infants born to Polish mothers do suffer unduly high infant mortality rates until it is learned that practically all families with heads born in Poland live in the low economic areas where the infant mortality rates are 75 and over compared with the economic areas where most of the families with heads native white of native parentage live which show a ratio of 52 or less infant deaths per 1,000 births.

Is the juvenile delinquency rate of boys of Polish parents unduly high? We find that 15.5 per cent of the juvenile delinquents in Cleveland's Juvenile Court (1931) have parents who were born in Poland, while but 5.8 per cent of the family heads in Greater Cleveland were born in Poland.

These data would incline one to state immediately that the Polish boy becomes involved in minor misdemeanors entirely too frequently. However, until the economic areas in which the Polish people live are learned and the variation in the juvenile delinquency rate according to economic areas has been determined, this question cannot be answered truthfully. (Chart IV.)

The 13 census tracts with the largest percentage of family heads born in Poland included 6,009 families (62.5 per cent of these family heads were born in Poland; 5.6 per cent in Czechoslovakia; 2.1 per cent in Germany; and 4.8 per cent in other foreign countries; 22.7 per cent in the United States of foreign or mixed parentage, and but 2.1 per cent of native parentage).

In these census tracts 30.6 boys were in the Juvenile Court per 1,000 boys 10 to 17 years of age, while in other census tracts but 21.2 boys were in the Juvenile Court per 1,000 boys 10 to 17 years of age. From this it appears that the boys from the Polish census tracts cause more trouble than they should cause. These latter census tracts included 16,159 families (77.6 per cent of these family heads were born in the United States—50.9 per cent of native parentage and 26.7 per cent of foreign or mixed parentage—8.7 per cent in the British Empire, and 10.7 per cent in other foreign countries, and 3.0 per cent were Negroes).

The equivalent monthly rental of the former census tracts was but $20 and a rate of at least 52 would have been expected, so that it is seen that the rate in this Polish neighborhood was low. The equivalent monthly rental of the latter census tracts was $57 and a rate of less than

10 would have been expected, so that it is seen that the rate in the American neighborhood was in fact high.

In the Polish census tracts only 25.1 per cent of the families had a radio set, while in the selected census tracts in which Americans live 66.6 per cent of the families had a radio set.

Thus, one might conclude that the Polish people avoid radios. However, as a matter of fact, the equivalent monthly rental of the Polish areas was $20, and in this economic status 25.1 per cent of the families with radios is practically normal (28 per cent). The equivalent monthly rental of the selected American areas was $57, and 66.6 per cent of families with radios was low (76 per cent).

While in the past some cognizance has been taken of nativity differences and more of racial differences, especially in the case of tuberculosis, it has been demonstrated that economic status must be given just as careful consideration.

Let us compare two cities of 100,000 population each. In each city there has been but one distributor of radio sets. The one succeeded so well that 80 per cent of the families had a radio set according to the 1930 census; but in the other only 21 per cent of the families had a radio set. One might say that the distributor in the latter city had not done as good a job and that his merchandising was unsatisfactory. However, when we find that the equivalent monthly rental of the former city was $19 and of the latter $83, the reasons for the difference in results are quite evident. The two cities have purposely been taken from Greater Cleveland where the encouragement to buy a radio set was but slightly different in the two areas. The desire was created in the two sections alike; the only difference was that the people in the latter area did not have the means with which to make the purchase.

While as many as 87 per cent of the families had a radio set in the economic area in Greater Cleveland composed of census tracts with equivalent monthly rentals of $100 and more, one census tract showing that 94.7 per cent of the families had a radio set, in two census tracts in Boston with equivalent monthly rentals of $100 and more only 35 per cent and 43 per cent of the families had a radio set. Thus, it is evident that radio promotion has failed to motivate the conservative Boston family in at least two areas in the city proper.

An examination of the tuberculosis death rate for the white population by age and sex for each of the two extreme sections of Greater Cleveland of 103,918 and 102,603 population, poor and wealthy respectively, indicates how widely divergent conditions are in economically different sections of a single metropolitan city.

In the census tracts having the lowest equivalent monthly rentals,

high rates for both sexes are found. The rates for girls 15 to 19 years of age are much higher than the rates for boys in this age-group, 36 and 19 respectively, and for those 20 to 24, 65 and 47 respectively. (Chart V.) However, the rates for women 25 years and over are much lower than for men. In fact, rates of nearly 300 deaths per 100,000 population are experienced by the men in the age-groups between 45 and 64 years. Possibly the lower rates for women may be accounted for by

CHART V

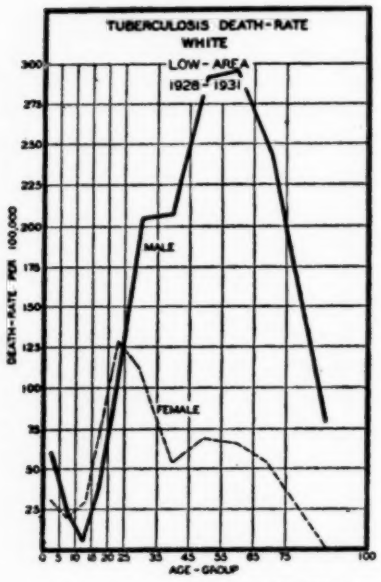
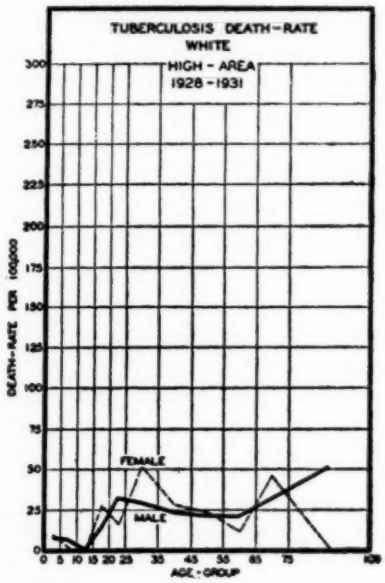


CHART VI



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the fact that the women are more protected in the age-group 25 years and over than the men.

In the census tracts having the highest equivalent monthly rentals similar rates for both sexes are found, and the rates at all ages and for each sex are very small, hardly in any instance at any age exceeding 50 per 100,000 population. (Chart VI.)

The rates for the women, if anything, exceed those for the men, possibly here indicating that the men rather than the women are more protected.

Differences such as these and multitudes of others which cannot be discussed in detail here indicate the enormous differences between the various sections of large metropolitan cities. Illiteracy, unemployment, marital condition, age distribution, possession of telephones and auto-

mobiles, sales of all sorts of commodities, each presents its own striking picture, emphasizing the lack of uniformity but at the same time the striking regularity of the relationships to economic status and the peculiar characteristics of each racial or nationality group.

Certainly this brief presentation has demonstrated the importance of carefully studying differences caused by economic status in everything from death rates to ability to purchase any sort of a commodity. The basic data by census tracts for Greater Cleveland has been published by the Cleveland Plain Dealer in *Population Characteristics by Census Tracts, Cleveland, Ohio, 1930,* which also includes my interpretations of the data by maps, charts, special tabulations, and text. Careful studies based on this material or upon similar material published by others for other census tract cities will produce results greatly in excess of the energy expended.

NEW FAMILY STATISTICS FOR 1930

By Leon E. Truesdell

We sometimes speak of the family bulletins and reports which we are publishing for 1930 as though family data were something entirely new in census statistics. As a matter of fact the enumerators' returns for the first six censuses, from 1790 to 1840, contained nothing but family data. On these early schedules one line was devoted to a family, and on that line were recorded the number of persons in the family, the number of males and females, the number in certain age groups, and a few other items. In 1850, for the first time, the census schedule devoted a line to each individual member of the family, recording thereon several items of information, including color, sex, age, etc. Curiously enough, however, the reports for the first six censuses contained statistics for individuals only, without even a count of the number of families, while the census of 1850, which was the first taken on the individual basis, affords the first published statistics of families, comprising the number of families and the number of dwellings.[1] The same information is published in the reports of the censuses of 1860, 1870, and 1880. In 1890 there were added a classification of families by color and nativity of head and by age, and a classification of homes by tenure and mortgage status. All this was repeated in 1900, with the addition of a segregation of families into private families and other families (institutions, hotels, boarding houses, etc.). The 1900 report represents the maximum amount of family data published prior to 1930, as the reports for 1910 and 1920 contain no family data except the number of families, the number of dwellings, and the tenure and mortgage status of homes.

The 1930 population schedule contained a new question, that on value or rental of home, which furnished the information for what is probably the most important single item in the series of tables giving family data in the reports of the Fifteenth Census. In order to make room for this inquiry, the question on mortgage status of owned homes, which had been carried for four censuses, beginning with 1890, was omitted. Other new questions which have provided a part of the material for the family tabulations are one designating some person in each family as home-maker, and one calling for age at first marriage.

It will not be out of place here to mention a few questions, relative to the family, which will be candidates for addition to the schedule used

[1] The number of families returned in 1790 was published in 1909, in a volume entitled *A Century of Population Growth*.

in the next population census. One of these is a more definite classification of dwellings, especially one which will segregate apartment houses, and perhaps also split the present classification of 1-family dwellings into two parts, one comprising those which are built entirely in the open and not attached in any way to other dwellings. A supplementary question for which there will be considerable demand is one indicating the material out of which the dwelling is constructed, separating at least brick, stucco, and frame houses. The number of rooms per family will of course again be an applicant for a place on the schedule, and with an adequate classification of dwellings its significance would be greatly increased. In addition to the value of the information on rooms per family in itself, the question would probably help to fix in the enumerator's mind the importance of the family as a unit, and thus increase the accuracy of all of the returns for families. There will be some demand for a question on wage income, similar to that carried in the Canadian census. If this question should be adopted the present question on value or rental of home would doubtless be dropped, since its main purpose, to afford an index of the economic status of the family, would be better served by the wage income returns.

A considerable number of the 1930 family classifications are based on the inspection or counting of certain items returned on the schedule for individuals; these include size of family (number of related members) and the classifications according to the number of children, lodgers, and gainful workers. Other classifications are based on the characteristics of the head of the family—color and nativity, sex, age, and marital condition. Occupation is also available on the punched cards, though it has not been tabulated, except for a small sample area.

In all of the earlier censuses, and even in the preliminary count of 1930, certain groups of people living together in such manner as to form what might be termed a household but not in any sense a normal family—such aggregations of population as institutions, hotels, boarding houses, construction camps, etc.—have been included in the count of families. In 1900, and again in 1930, these have been separated from private families, being designated in 1930 as quasi-family groups.

Most of the detailed tabulations of the current census are made for private families alone, omitting the quasi-family groups. This change in the base of the family data, however, makes much less difference than might be anticipated, since the whole number of quasi-family groups to be subtracted from the gross total of 29,979,841 families is only 75,178, or less than three-tenths of 1 per cent. The population contained in these groups, amounting to 2,962,861, forms a larger fraction of the total population, but even this item is only large enough to

reduce the average population per family from 4.10 for all families, including the quasi-family groups, to 4.01 for private families alone.

The family data so far published are contained in a series of state bulletins, supplemented by a summary bulletin for the United States as a whole and a series of press releases giving some of the more important items for the United States by states and for the larger cities. These bulletins will presently be assembled to form Volume VI of the Fifteenth Census Reports on Population. In the state bulletins family statistics are presented for the state as a whole, with figures for urban, rural-farm, and rural-nonfarm areas, for counties, with separate figures for rural-farm and rural-nonfarm families, for all urban places individually, and for the wards of the larger cities, under the following classifications (comprising the material from the First Machine Count):

Color and nativity of head of family
Tenure of home
Value or rental of nonfarm homes [1]
Size of family (number of related members)
Number of children under 10 years old (families classified according to number of such children)
Families having radio set
Dwellings, by class

Other classifications (obtained from the Second Count) are presented only for the state, subdivided into urban, rural-farm, and rural-nonfarm areas, and for cities of 25,000 or more. These classifications are:

Number of children under 21
Number of lodgers
Number of gainful workers
Sex of head of family
Age of male heads
Home-makers by employment status

The series of state bulletins containing this information has been completed and the United States summary will probably be published by the time this statement appears in print.

The tabulation of foreign-born white families by country of birth of head (the Third Count) has been completed, and the copy for the resulting tables has been sent to the printer.[2] This material, and that resulting from the subsequent tabulations, will not form a part of the regular Fifteenth Census Reports, but will be published in octavo form

[1] To be supplemented by a tabulation of farm homes classified by value in corresponding groups, for states and counties.

[2] These tables include condensed statistics for Mexican, Indian, Chinese, and Japanese families.

in a series of supplementary reports or special studies. The data presented by country of birth of head of family include:

Tenure of home
Value or rental of nonfarm homes
Size of family
Number of children under 10
Number of lodgers
Number of gainful workers

Another tabulation (the Fourth Count) which is approaching completion shows for families having gainfully employed home-makers, classified according to type of employment, the following items:

Size of family
Number of children under 10
Number of lodgers
Number of gainful workers
Marital condition of head of family

For still another tabulation (the Fifth Count) the machine work has been completed and some work has been done on the compilation of tables. The basis of this tabulation is a rather complicated sort by type of family, showing separately the families in which both husband and wife are present and having 1, 2, 3, and 4 or more children under 21, and various types of broken families classified according to sex and marital condition of head, and by number of children. In the marital condition classification a separate group is made of those cases where the head of the family is reported as married, but the wife (or husband) is not returned as living with the family. For each of the 37 types of family thus obtained are shown the following items:

Tenure of home
Value or rental of nonfarm homes
Size of family
Number of children under 10
Number of lodgers
Number of gainful workers
Sex and age of head

The Sixth Count is designed primarily to show the relation between the number of children under 10, and the age, and age at marriage (or duration of marriage) of the wife in selected families classified by color and nativity and by value or rental of home, one of the most important of the family tabulations if it could be completed. Present indications are that no more than one sample area can be finished.

One other projected count remains untouched, tabulation of data of various kinds for families classified according to occupation of head.

In connection with two of the classifications of the family data we have introduced the median, a figure not previously used in the census reports, except to a very limited extent in connection with age. Median values and median monthly rentals for nonfarm homes seem to be accepted without question and to present no difficulties. The argument here in favor of the use of the median was conclusive, since with an indefinite group (under $1,000) at the beginning of the series and another ($20,000 or over) at the end, it was not possible to compute average values or rentals.

For the median size of family the argument was not quite so strong, since it would have been physically possible to compute the average size of family and to present averages in all the detail for which we have presented medians. The amount of labor involved in computing an average from the available data, however, was several times that required for computing a median; and the median seemed to have certain theoretical advantages as a more accurately representative index.

Measuring the value of the various family classifications by the demand which has come to our attention in the Census Bureau, the most important would doubtless be that by tenure, followed closely by value or rental of home, and then by color and nativity.

By reason of the number and urgency of the requests which we received four years ago for a separate classification of home-makers on the census schedule, we anticipated a very widespread demand for the home-maker data as soon as they become available. This demand, however, has failed to materialize. The home-maker question, therefore, is not likely to be repeated in another census.

A considerable number of special tabulations of the family data have been made for (and at the expense of) organizations and corporations desiring the information for some special purpose. The most extensive of these was a tabulation of various data for families having a radio set and families not so equipped, which was made for one of the major broadcasting companies. Another was a tabulation of value and rental and other family data for numerous city and suburban areas, for the advertising office of the publishers of a group of widely circulated magazines. The family cards are now in permanent (or semi-permanent) storage and will probably be available for three or four years for such tabulations as their geographic arrangement will permit.

THE CENSUS OF DISTRIBUTION

By Robert J. McFall

The Census of Distribution taken in the United States in the year 1930 was the first work of its kind ever undertaken on a comprehensive basis in any country. The State of Massachusetts and some foreign nations gathered data on distribution at an earlier time, but no country or state has previously covered this field in such manner as to set any precedent or give any guidance in this new branch of census-taking. This new Census has, accordingly, presented entirely novel problems concerning scope, points of view to be left in the foreground and bases of analysis, as well as many new technical questions of greater or less magnitude. It has also resulted in supplying a new body of data in a vitally important department of our national economic life.

The scope of this Census has embraced practically the entire field of merchandise operations, but it does not include transportation, banking, and the professional services. It starts with the selling operations of mines, quarries and factories and the assemblers of farm products and carries the marketing through all merchandising functions to the industrial, commercial, farm and household consumers. Thus it presents a comprehensive chart or picture of the marketing machine and its operations and fills in this neglected gap in our economic structure.

Two major types of information have been desired in the field of marketing which might possibly have resulted from the Census of Distribution. The information of greatest popular appeal would consist of comprehensive data relative to the movement of commodities through each stage of development and through each marketing center. The other consists of systematized facts relative to the mechanism and facilities of the marketing system. The former is the more difficult to gather (owing to the lack of records kept by the dealers themselves) and to present in statistical form in such manner that it can be understood and put to practical use. The latter is less difficult to obtain and to present. It has been possible for the Bureau of the Census to secure such information from the merchants to a degree to which it would not be possible to obtain the data pertaining to the specific movement of commodities. In the long run this information is the more fundamental and more far-reaching in its usefulness. Such information is of great importance not only to economists, sales managers and advertising agents, but to wholesalers, retailers, and every other group interested and involved in distribution.

Accordingly, the Census of Distribution is primarily a systematic

picture of the mechanism of marketing with as much additional information as could be gathered and presented within practicable limits covering the distribution of actual commodities. The Census gives systematic information concerning all the channels of trade, such information being classified in as detailed a manner as possible, both geographically and by the kind and type of business.

Retail Distribution.—The operations of all retail stores and all establishments doing business in a retail manner are covered. Thus, in addition to the actual stores, it covers gasoline filling stations, certain types of garages and the operations of restaurants.

The retailers and their operations are classified by kinds of business, thus presenting retail activity on a fully classified basis related to the class of merchandise handled. This should not be confused with a commodity classification. Grocery stores have been distinguished from hardware stores, jewelry stores, drug stores, etc., each establishment being classified in accordance with its major operations. Yet a grocery store may sell some hardware and a hardware store may sell some food. While in the long run such minor operations may tend to balance each other, leaving the non-food sales of grocery stores to offset the sales of groceries as a line of commodities in other kinds of stores, yet there is no immediate assurance of such a balance. Moreover, the commodity sales of department stores, drug stores, and general stores cover such a wide selection of commodities that care must be exercised against assuming that any kind of business classification is identical with a commodity group classification. In the larger cities and in the state totals, it has been possible to classify the retail stores in almost complete detail by kind of business. In the reports covering sales by counties and small incorporated places, a standard kind of business classification covering the major classifications has been followed.

Retail stores have also been grouped by type of operation, distinguishing independent stores from chain stores, etc. Instead of dividing the field into just these two classes, the multiple unit organizations have been very carefully classified, distinguishing what have been termed 2 and 3 store independents, local chains and branch systems, sectional chains, national chains, manufacturer controlled chains, etc.

Classifying the retail establishments into these two general subdivisions, as much information as possible has been shown relative to the stores and their operations on a thoroughly differentiated geographical scheme. The number of stores and their sales are shown for the chief kinds of business for all cities having 1,000 inhabitants or more. For states and the larger cities considerably more detail is presented, including information on stocks, employees, wages and expenses.

Commodity information was collected from as many retail stores as possible in the cities having 10,000 population or over and their stores having annual sales of $60,000 a year apiece and over. Both of these lines of demarcation were arbitrary. It was felt that it would have been impossible to collect commodity information from the smaller stores even in the cities. Moreover, the operations of the smaller stores amount to a relatively small proportion of the national retail sales. The lack of commodity data for the small cities and rural regions is more unfortunate. The commodity data are presented only in the state summaries and for the largest cities.

Wholesale Distribution.—In the wholesale field the entire group of non-retail merchants is covered, portraying the operations of all dealers between the producers and the retailers. Unfortunately the established terminology at our disposal is somewhat weak at this point. The term "wholesale" is frequently understood by the general public and by retailers to cover only that part of our distributive mechanism which sells directly to the retailers. There is, however, a very much broader field of merchant establishments carrying on business in much the same manner by those less popularly known types of establishments operating in these fields. Unfortunately, there is no other term than "wholesale" to apply to this field as a whole. Accordingly, the wholesale field as used in this Census covers the entire field of non-retail merchants. On the other hand, the term "wholesale merchants" applies to those establishments which do business in what is the more popularly understood narrow scope of wholesaling. Between these two extremes there is another group of dealers who do business in a manner very similar to that followed by wholesale merchants, but which is more or less distinguishable from the operations of actual wholesale merchants. This middle group, along with the wholesale merchants, is included in our reports under the caption of "wholesalers only."

Thus under the heading of the wholesale field there are included not only those establishments which are called "wholesale merchants," but also brokers' establishments doing business on the agency basis, manufacturers' sales branches, import and export houses, chain store warehouses, the country assemblers of agricultural products, and those who handle industrial as distinguished from consumer goods in a wholesale manner.

All establishments and their operations are classified on their functional type of operation (e.g. wholesale merchants vs. brokers, etc.). The wholesale field is also classified by kind of business, and auxiliary data are given for commodity sales. The data are also presented in as great detail as possible geographically.

Agricultural and Rural Marketing.—Particular attention has been paid to the development of information relative to the entire field of marketing in rural territory and the small cities, and to the assembling of agricultural products at country points. Insofar as possible the other phases of the marketing of raw agricultural products are being related thereto and covered in special statistical presentation.

Industrial Marketing.—Probably no part of the field of marketing is less known and more in need of charting than is industrial marketing and the Census has done everything practicable within its scope to develop this type of information. In addition to the work of chronicling the operations of merchant establishments engaged in handling such lines of goods, the merchandise operations of the manufacturers and mine operators themselves have been covered. The immediate sales from factory and mine have been broken down into the various channels through which these goods are first sent on their way to market. Thus the manufacturers' sales to other manufacturers are distinguished from their sales to wholesalers, their sales to retailers, and their sales to consumers, and the part of such sales made through their own sales branches is distinguished in each of the major channels.

Construction Industry.—The construction industry has also been covered; a new departure for the Census. It offers one of the most important market outlets for many materials. The operations of contractors have been covered in an intensive fashion, giving special attention to their utilization of materials and to an analysis of the construction business in the Nation as a whole and in each of the states and large cities and more important counties.

Hotels.—A census of hotels having 25 guest rooms or more was included. The operations of hotel dining rooms come under this heading and are supplementary to the data on restaurants of the retail census.

Trade and Special Reports.—A few trade reports and special reports are being published. The trade reports bring together into single bulletins the distribution data relative to a single trade for the greater convenience of users. These reports also contain a material amount of analytical text relative to the data included therein. The economic and other special reports contain still more analytical material and cover such phases of distribution as employment, operating expenses, and practical utilization of distribution data for business uses.

The Census of Distribution offers the first comprehensive picture or chart of the internal marketing structure of the country. As such, it affords to all potential users a valuable mass of information useful in itself and in combination with private marketing figures and the results

of various kinds of research. Since it covers quantitatively the entire field of marketing it gives an opportunity to weigh the relative size, importance and, to a certain degree, the effectiveness of various channels of trade. The new distribution data give a more adequate idea of the relative part played by distribution in our economic structure. New data are available for comparison with those in existence for other industries on such matters as the number of establishments involved, the people employed and their emolument, the expenses involved, the geographical set-up of the marketing machine and the credit structure in distribution.

Much additional information is made available about the regional economic life of the country. The marketing facilities in each section and community of the country, their operations and what they handle and the local purchasing habits of communities are pictured in considerable detail. Many geographic differences emerge. For example, the retail trade of some states is considerably more than double that of others on the per capita basis. Extreme concentration of wholesale trade appears. Such comparisons are available for specific regions and communities and for various types of communities. Thus the retail trade of large cities is compared with that of smaller places and rural regions, shedding light on the question of urbanization of trade.

The data on rural retail trade provide information of great interest to all classes connected with rural life. There has been much concern lest the retail trade should in large measure desert the smaller communities and make it necessary for the country people to go to the larger centers to shop. The Census facts offset such concern, and show that a healthy trade does exist in these smaller communities. They indicate that this trade is of such proportions as to provide for most of the needs of these communities, and also shed light on how this trade may be improved by showing many facts about its competitive situation.

Of particular importance to the rural interests are the data on comparative costs of retailing in the smaller centers. These smaller retail costs in the smaller place, once appreciated, may do much to offset the known facts concerning the greater costs of wholesaling rural stores and to promote trade in these regions. The rural credit problem is illuminated by the data on credit extended by retail stores. Credit is a production as well as a consumption problem with the farmer. A large part of such credit is extended by the local stores. The amount of this and a comparison with credit in urban regions is available in the Census of Distribution.

New information is given on the relative importance of the trade in different major types of goods. Thus the relative importance of such

major classes of commodities as capital goods and consumer goods may be distinguished in their movement and their relative importance. Such data, especially when later censuses show trends, may help greatly in judging whether or not the economic activity of the Nation is in proper balance.

The expense data relative to distribution will help to solve some important problems which should affect our economic planning. The data on expense of operation in relation to size of unit will help to evaluate one very important trend of modern times. The retail expense data by size of city show differences which may well point to far-reaching changes in the future development of the Nation. Among other problems on which light is shed are the relative development and expense of chain stores versus independent, the relative use by manufacturers of direct marketing to retailers versus the use of wholesalers, and the rate of mortality of merchant operations.

The data are being used in studying tax problems. Sales data are, naturally, useful as a basis for analyzing the possibilities for sales taxes.

Labor and employment in the merchant fields are covered, the data constituting a considerable body of new information on the people employed in all branches of trade, in hotels and in the construction business, such as wages, the number and sex of the employees, and seasonality of employment. That part of the construction bill of the Nation, differentiated by class of work, which goes for the direct employment of labor, is distinguished.

The Census has been found on the one hand to support many soundly conceived ideas which were not previously adequately established by fact. On the other hand, it frequently presents results which disprove preconceived ideas which have been developed from too limited a foundation of evidence. In this way the old-established bodies of thought are being checked and changed by a large body of real information. Of still greater possible usefulness is the opportunity which is presented for analytical conclusions on subjects in the marketing field which have previously been almost unexplored.

DISCUSSION

By Theodore N. Beckman

The scope of the Census of Distribution and the data now available as a result of it have been so well described by Dr. McFall in his paper that there is hardly anything I can add on that score. To be sure, one can amplify the explanations covering the various definitions, classifications, and methods of presenting the data, but neither time nor the purpose of this discussion would justify such procedure. Dr. McFall has also suggested some of the broader uses of the data and their economic importance. To these I can add but little. I do believe, however, that the members of the American Statistical Association would be particularly interested in a few specific uses of far-reaching significance that can be made of the Census of Distribution statistics.

In the first place, the data can be used in the construction of a purchasing power index. Salaries and wages received from retail and wholesale establishments have heretofore been unknown quantities and hence such facts could not previously be used among the factors entering into the construction of such an index. In the second place, the data can be used to great advantage in delimiting both retail and wholesale trading areas. In fact, it is believed that without these data trading area studies cannot be made properly. Third, some of the statistics can be used in making forecasts as to the possible requirements for certain types of commodities. From the construction data, for example, it is possible to determine how much of a certain commodity is used in the construction of a given type of building. From the awards made as published by the F. W. Dodge Corporation, together with the ratio between awards and actual commencement of construction and the length of time normally required from the beginning of work on a certain type of building until the material in question is needed, one can develop excellent forecasts.

However, the most interesting use of a general character that can be made by statisticians of the data is probably in connection with the construction of a reliable and adequate wholesale price index. Inasmuch as I do not claim the distinction of being an expert statistician, it may be presumptuous on my part to undertake a brief discussion of this particular subject which is both exceedingly intricate and technical.

It seems to me that in order to construct a wholesale price index scientifically, it is necessary to define wholesale prices and to distinguish clearly between wholesale trade to which those prices appertain and retail trade. In compiling the data for the Wholesale Census, we

found it exceedingly difficult to distinguish between wholesale trade and other kinds of trade. The terms "wholesale trade" and "wholesale prices" have to date been used loosely, thereby causing considerable confusion and inaccuracies in statistical work.

We have also found that wholesaling is being performed on several different planes, based largely upon the type of customer to whom the commodities are sold at wholesale. In the case of manufactured goods, for example, a producer may sell a given commodity such as flour to wholesalers or jobbers. He may sell that commodity direct to retailers or direct to the larger bakeries, with or without the intervention of a broker. Obviously, the prices charged in the sale of flour by a manufacturer to an industrial concern such as a large bakery, are quite different from those charged to wholesalers, and still different from those charged to retailers when such sales are made direct from the factory. When the flour mill sells its product to a wholesaler, the wholesaler in turn disposes of it either to retailers or to industrial consumers.

Thus, we have in this instance, at least five planes of wholesaling. Not only are the prices of the same commodity different in each of the five planes of wholesaling, but on each of these planes the degree of price change or price variability between certain dates may be quite different and there may also be a considerable difference in the trend, etc., as compared with the prices of the same commodity on the other planes of wholesaling. It is generally conceded that prices charged by manufacturers in their sale of goods to wholesalers change more frequently but in relatively smaller amounts than the prices charged for the same commodity by wholesalers to retailers.

Another great weakness in the construction of wholesale price indexes to date, has been the lack of attention to a proper representation of the different classes or types of commodities. On the basis of the Census of Distribution data we find that all commodities can be divided roughly into raw materials, semi-manufactures, and finished products. The raw materials, in turn, could well be divided into farm products and mineral products. The finished products can also be divided into farm products and manufactured goods. It is well recognized, I believe, that the prices of these classes of commodities differ in the variability and may even differ for individual commodities within a single classification, although generally, price changes for commodities in a given class are more sympathetic and synchronous in movement.

Finished products may also be divided into those intended for industrial consumption and those intended for consumption by the individual. Such finished products as machinery and equipment which are always in the nature of durable goods, naturally have a different price variabil-

ity and trend during different phases of the business cycle than is true of finished goods intended for the ultimate individual consumer exclusive, possibly, of durable goods such as furniture and homes.

The need for a careful distinction between different types of commodities has already been pointed out on various occasions by our leading statisticians. Professor F. C. Mills has even gone so far as to indicate a need for attention to differences in prices of the same commodities as between different markets, and has suggested that in the construction of a general price index number for the United States, different geographical areas be properly represented in the list of price quotations used, but as far as I know, no attempt has been made to have the different planes of wholesaling represented in the price quotations, nor has any clear cut differentiation been made as between different classes or types of commodities. It is my contention that there are greater price differences for a given commodity on different planes of wholesaling in a given geographical area, and there is greater price variability on some planes than on others, than is true of differences in prices or price variability of a given commodity as between geographical areas.

To construct a wholesale price index scientifically, it seems to me that it is necessary first to use each time the same number of price quotations for commodities of a given homogeneous classification, or else to make proper allowance for differences. Second, to weight each commodity, not on the amount of that commodity in relation to other commodities used in the preparation of the index, but on the volume of spot or cash trade in the commodity, relative to the volume of trade in the other commodities. Third, to have proper representation in the price quotations of the various planes of wholesaling and to be sure that the same number of quotations is being used each time for a given plane or else allowance be made for differences. Fourth, to give each class of commodities entering wholesale trade proper and adequate representation.

The data of the Wholesale Census can be used to advantage along these lines, since the Census presents the commodities in such a way that they may be properly classified and the relative position of each ascertained on the basis of volume of trade. The Wholesale Census also shows what proportion of a given commodity is being sold to industrial consumers and what percentage of the total is intended for ultimate or individual consumption. Moreover, it presents a quantitative analysis of the different planes of wholesaling.

PUBLIC WORKS AND INFLATION

By R. F. Kahn

The main object, I take it, of economic policy at a time like the present is to raise the level of output and of employment. Judged by this criterion success can be attained only by raising the demand for output as a whole. Now all methods of raising the demand for output can be classified under two heads: those that involve an increase of investment, increased output of non-consumable goods, and those that involve a reduction of saving, increased consumption of consumable goods. So far as concerns a reduction of saving by private individuals, much might be said, but little can be hoped. If we turn to the promotion of private investment we find a heart-breaking task, to which bankers are beginning to address themselves by forcing down the rates of interest and expanding the basis of the credit structure. But it is clear that things have come to such a pass that, while it is all the more necessary to give every possible encouragement to private investment in order to prevent further deterioration, if we are thinking in terms of recovery there is little to be hoped. The normal channels of private investment, like those of private spending, are hopelessly choked, and such stimulus as can be devised meets with but a sluggish response.

We turn, therefore, to the state, and here again we must look either to a diminution of saving or to an increase in investment. The one involves an increase in the budgetary deficit, the other can be illustrated by a program of public works financed by borrowing.

But the advocacy of budget deficits must be regarded as a hopeless cause. The problem for the world today is how to repair the ravages that are resulting from the attempts of one country after another to follow the dictates of orthodox finance. It began with England, where the balancing of the budget has done much to obscure the benefits of the fall in our exchange which the balancing of the budget was powerless to prevent. I shall therefore talk of public works, leaving it to be understood that the difference between the effects of public works and of a budgetary deficit is mainly one of degree.

The point is, of course, that the money is raised by borrowing. If public works are financed by taxation the benefit is of an entirely different order of magnitude, for, in evaluating the effect on employment, we have to subtract the effect of the diminution in taxpayers' consumption. That case I shall not consider.

The object of the policy is to promote output and employment by raising the demand for goods. Accompanying the increase in output is likely to be a rise in prices, the extent of which is dependent on the technical conditions of supply. At a time of severe depression like the present—when there is a considerable surplus of unused plant and labor—supply is highly elastic, and a substantial increase in output would involve only a small rise in prices. What I should like to emphasize is that it is quite beside the point to regard a rise in the level of prices as the *objective* of economic policy. What one is trying to do is to increase output by raising consumers' demand. It is quite true that output can only be increased at the *expense* of higher prices: the supply curve of output as a whole slopes upwards. But that is quite a different thing from saying that the *object* is to raise prices. Indeed, it is just at a time like the present when, supply being highly elastic, a given increase in output would be accompanied by a comparatively trivial rise in prices, that the case for securing such an increase of output is strongest. The rise in prices is not an end in itself, and it is not even a means to an end. It is merely a by-product, and in many respects an undesirable though a necessary by-product, of a rise in output. "Reflation of output" should be the cry rather than "reflation of prices."

And that brings me to a related point. It is often said that one measure is less desirable than another because it is more "inflationary." Such a manner of speaking seems to me to have no meaning. Any measure that raises output can be said to be inflationary—apart from such measures as involve a reduction of costs—for any increase in output is necessarily accompanied by a rise in prices. And all such measures are inflationary to an equal degree, for a given increase in output is always accompanied by the same rise in prices no matter how it is brought about. The rise in prices is determined by the supply curve and by nothing else. It is impossible to differentiate between so-called "natural" remedies and "unnatural" remedies on the ground that the one class is more inflationary than the other. If one policy is more potent than another in raising prices, this can only be because it is also more potent in raising output, and it is not an objection but a recommendation. If it appears too potent, then all that is required is to apply it in a lesser degree. There is no need to discard it altogether.

To sum up, there is a unique correlation between output and prices, given by the supply curve of output as a whole, which depends only on the technical conditions of production. In the same way, to turn now to a different matter, there is a unique correlation between output and the quantity of money in circulation. A given output is associated

with a given level of incomes and of prices, and at that level of incomes and of prices there is a certain quantity of money that people will want to carry about in their pockets and to hold in their banking accounts. This quantity of money is an effect, not a cause. If output is raised, say by pursuing a policy of public works, the quantity of money that people want to hold is increased, both because incomes are higher and because prices are higher. But the quantity of money has gone up *because* output has expanded, and this expansion of output is necessarily accompanied by the same increase in the quantity of money whatever the cause to which it is due. To condemn a particular policy because it seems to be based on an expansion in the currency is therefore quite impossible. If it is to be successful at all in increasing output it must involve an increase in the quantity of money held by the individuals who comprise society—no more, and no less, than any other policy.

The fallacy that I have in mind is, of course, quite insufficiently disguised when it takes the form of some reference to the printing press, coupled perhaps with a reminder of what happened to Germany in 1923. But in more insidious shapes it has, I believe, stood in the way of an enormous amount of useful action. The question of the source of the funds to be expended on public works—or on a budget deficit—is always a worrying one. If the money can be raised by borrowing from the public, then according to the usual view all is well. Now it is easy to imagine a situation where a national or local authority would have difficulty in floating a loan. The alternative is to borrow from the banking system, from the private banks if they are able and willing to lend, and failing that from the central bank, subject, of course, to any necessary changes in the law. But as soon as recourse to the banking system is alluded to, the cry of "inflation" is raised and fears are expressed as to the "safety of the currency"; and the policy is probably doomed. But in the light of common sense it can be seen that it does not make the slightest difference where the money comes from (so long as it can be obtained without diverting consumption or investment from other bodies or individuals). If public works were financed by loans from the Federal Reserve Banks or if in some way they entailed an expansion in the amount of backing to the currency, the rises in output, in prices, and in the quantity of money would be just the same as they would be if the money were obtained by borrowing from the public.

I turn now to the effect on employment. The *primary employment*, as I term it, is provided in the actual construction of the public works themselves and in the provision of materials. But associated with this primary employment is *secondary employment* arising as a result of the

increased expenditure on consumption: newly employed men spend their wages and the contractors spend their profits. The output of consumption goods is increased in response to this increased demand, more men are employed, more profits are earned, and the effect is passed on once again. And so on, *ad infinitum*. But at each stage there is, so to speak, a certain amount of leakage and the effect is passed on with diminished intensity. This leakage takes three forms. In the first place, not the whole of the wages of the newly employed represents a *net* addition to spending power. They were previously in receipt of a "dole," a word which I use for convenience, and without any malice, to represent the income of an unemployed worker, whether it is derived from the state, from organized charity, from friends and relations, or from personal possessions. Part of this dole is obtained at the expense of the consumption of other individuals: this part represents a mere redistribution of consumption. But not the whole of the contributions toward unemployment relief is made at the expense of consumption. Part is made at the expense of saving or is borrowed, and this part may be called the *non-transfer portion of the dole*. It then follows that the net addition to expenditure when an additional man enters into employment is equal to the excess of the wage that he earns over the non-transfer portion of the dole that he was previously receiving. In the second place, not the whole of the extra profits that accrue when an extra man is drawn into employment is spent on commodities. Part of these profits is saved. Finally, it has to be remembered that not the whole of the fresh expenditure, out of wages and out of profits, is directed to home-produced goods. Part is devoted to imports.

The leakage of which I have spoken is thus made up of the non-transfer portion of the dole, of savings out of profits, and of imports. The secondary employment, provided in the production of consumption goods, is represented by an infinite but converging geometrical progression, whose common ratio depends on these three crucial quantities. The smaller the dole in relation to the wage and the smaller the extent to which the dole is financed out of savings and borrowings, the larger is the ratio of secondary to primary employment; the more spendthrift the entrepreneurs, the larger is the ratio of secondary to primary employment; and the more self-contained the system, the larger is the ratio of secondary to primary employment.

Now if we compare the United States with my own country, it is clear that the dole is here a smaller proportion of the wage; and still more the ratio of the non-transfer portion of the dole to the wage is smaller in the United States than in England. Furthermore, the

United States is a far more self-contained country than is England. There is a doubly good reason, therefore, for expecting the ratio of secondary to primary employment to be considerably larger in the United States than it is in England. A policy for combating unemployment will be more effective in the United States than in England; and the argument can also be reversed to show that any decline in investment or increase in saving will be proportionately more disastrous in a country like the United States than in a country like England. In other words, the American system is more sensitive to changes, whether they are for the better or for the worse, than is the English system.

But I am not really able to attempt even a rough guess as to the orders of magnitude of my fundamental ratios for the United States. In the case of England the system of unemployment insurance provides a securer basis for computation. The result of my calculations, based on summing an infinite geometrical progression, is to suggest that for every man put into primary employment in England probably over three-quarters of a man is drawn into secondary employment in the production of consumption goods.[1] But that is making no allowance for the effect of the reduction in taxation which, under the régime in force since September, 1931, would ensue from a reduction in the cost of unemployment relief. After sufficient time had elapsed for the reduction in taxation to be effected and for this reduction to work its way through to increased consumption, the ratio of secondary to primary employment would be raised from three-quarters to one, and possibly more. That is for England. For the United States, as I say, the figure must be considerably greater. For every extra man employed, directly or indirectly on public works, well over one additional man would be drawn into the ordinary industries that cater for the nation's consumption.

This secondary employment, which, if I am right, is of an extraordinary magnitude, is usually completely ignored in discussions on the adequacy and the cost of various measures for dealing with unemployment. Its exclusion from the argument makes the cost of providing a given amount of employment appear to be double, or more than double, its true amount. The effect is even more remarkable if allowance is made for the saving on the cost of unemployment relief. Once again I may perhaps be excused for quoting figures that apply to my own country. The expenditure of one million pounds per annum on public works would, according to the most conservative estimates, provide primary employment for 4,000 men. But if allowance is made for the secondary employment and for the saving on the dole, a net expendi-

[1] See *Economic Journal*, June, 1931, p. 186.

ture of one million pounds per annum would on the same basis employ altogether, not 4,000 men, but over 12,000; in other words, 1,200,000 men could be employed at a *net* cost of 100 million pounds per annum.

There is another very important conclusion to be drawn. My figures suggest that the saving in respect to unemployment benefit amounts to about half the cost of the public works. That means that even from the narrowest budgetary point of view it would pay the British Government to subsidize schemes of this kind to the extent of one-half the capital cost. When I mention that this calculation excludes any allowance for the increased yield of taxation when profits increase and for the increased consumption of the taxpayer when taxes are reduced, it will be seen that it is a very conservative estimate.

But as, I suppose, is well-known, the trend of sentiment in my country is entirely in the opposite direction, and I hasten to say a word about the application of these figures to the United States. Here again I am held up in almost complete ignorance of the orders of magnitude. I have already shown that the ratio of secondary to primary employment is certainly considerably greater for the United States than for England. But it would, of course, be wrong to deduce that a greater proportion of the cost of public works is covered by a reduction in the cost of unemployment relief. For the relatively low level of the dole in the United States as compared with England is itself part of the reason why the secondary employment is so great. It is not, however, the whole of the reason. There is also the fact that non-transfer payments form a less important element in the American dole than in the English dole, and, far more important, that a smaller proportion of any addition to expenditure is devoted to imports. I should, therefore, be inclined to guess that the saving in respect to unemployment relief out of Federal and State funds and out of the funds of organized charities, while it might not amount to as much as one-half of the capital cost of the public works, would not fall a great deal short of one-half. At any rate there can, I think, be little doubt that subsidies considerably in excess of the 20 per cent level that Colonel Rorty advocates [1] would pay for themselves without bringing into the account any allowance for the alleviation of distress, for the value of the completed works, or for the likelihood that it is only in this kind of way that the wheels of private investment and spending can be set revolving so that the system could be left to carry on once again under its own momentum.

[1] M. C. Rorty, "How may Business Revival be Forced?" Supplement to the April, 1932, *Harvard Business Review*, p. 391.

THE SCIENTIFIC STIMULATION OF EMPLOYMENT

By J. Douglas Brown

Three major stages in the evolution of our thinking as to how best to stimulate employment stand out, not chronologically alone, but in the policies now being followed. These three major stages are the stimulation of employment through: (a) Appeals to employers, (b) expenditures and loans by governments, (c) assisting the unemployed to work in producing for their own consumption.

The period from 1929 to 1931 was the hey-day of appeals to employers to maintain or create employment. New construction and accelerated maintenance were held out as means of putting men to work. Plants were urged to clean up and paint up, to tear down old buildings and build bigger. The campaign emanating from Washington and hundreds of other centers had considerable effectiveness and put thousands to work, but it proved but a weak brake against the rapid decline of employment.

The more recent manifestations of the stimulation of employment through appeals to employers are the campaigns to spread employment and to accelerate the rehabilitation of plants. The former is, of course, not a measure for the net increase of employment but for the distribution of an assumed lump of work still available in such a manner as to lessen distress. Some enthusiastic supporters feel that spreading employment will assist in hastening resumption and therefore the creation of a net addition to the work to be done. More conservative exponents realize that it is essentially a relief measure and that there is much question as to its repercussions on operating costs and the character of demand. The program for the rehabilitation of plants rests upon the assumption that obsolescence has continued to exercise its deteriorating effect on the relative efficiency of plant equipment and that American manufacturers must install new equipment to maintain their high level of effectiveness when business resumes.

But the stimulation of employment through appeals to enterprisers rests primarily on the obligation of industry to do its share in the alleviation of unemployment rather than upon any proved assurance of the economy of such steps. The arguments urged upon the individual employer are the alternative costs of public relief and the possible contingencies of direct action by workers facing serious distress. For a time the advantages of low prices of materials, labor, and equipment were pressed as economic reasons for action, but the continued decline

of such prices and wages has discouraged less optimistic enterprisers who cannot be assured that the day of the bargain prices is nearing an end.

Essentially, such measures involve a diversion of purchasing power from the hands of one group of workers to another or from the stockholders of the enterprise to the workers rather than the creation of any new purchasing power. The purchase of new equipment at uneconomic prices or before such equipment can be economically used is of doubtful advantage unless the alternative costs of lowered morale and distress among the labor to be employed sanctions a mortgaging of the future of the enterprise. Many employers have come to feel that unemployment is too much a community concern for them to take risks with stockholders' money. In spreading employment, however, the costs upon the employer are slight compared to the impairment of income which employees with prior rights to employment have undergone. Spreading employment is primarily their contribution to the alleviation of distress.

With but limited results in the stimulation of employment through appeals to employers, we have turned more and more to governmental loans and expenditures as a stimulus to new employment. Since such measures have already been discussed at length, it is unnecessary to point out in detail the change in our thinking which experience has forced upon us. In the early stages of the depression the stimulation of the construction industry became the chief point of attack. Since governmental units were great factors in that industry, the diversion of huge sums into the construction of highways, public buildings, and other improvements was demanded by a great majority of economists and public-spirited citizens. The drain upon the public treasuries, the effect upon governmental credit, and increasing taxation have forced us to look for other means of creating new employment. The satiation point of new highways and public buildings has been reached in many parts of the country when their costs in terms of other community needs are considered. Even serious unemployment cannot be an adequate reason for the provision of luxurious public buildings and beautifully straight superhighways in communities of idle plants and distraught tax-payers. The mortgaging of a "prosperous" future seemed sound so long as that "prosperous" future appeared near. We have now entered upon the vicious circle of postponing that prosperous future by borrowing on it too heavily to save ourselves from a distressful present.

As a part of the campaign to stimulate employment through governmental action, we have pumped public credit into many industries. We have relied upon a sifting down process which in many cases has not

seemed to work. Many loans have resuscitated the finances of weak enterprises rather than stimulated the employment of workers. While such loans have had very beneficial effect in bolstering the faltering credit of our key industries, as measures for stimulating employment they have had but limited influence on account of the hesitancy of business as a whole to base present building and production on a doubtful future demand.

The third stage in our thinking as to means of stimulating new employment is directed toward worker self-help. The reasoning which has convinced many of the effectiveness of such an approach to the problem appears to be economically sound. The proper point of attack in the creation of new employment, it is claimed, is that of *demand* and the end of our efforts is to develop *effective demand* among unemployed or under-employed persons which in no way involves a diversion of purchasing power from other channels of trade. To create effective demand, an unemployed person must be set to work to produce something for which demand exists so that he may exchange it for the goods he needs. In producing shoes he creates purchasing power if in some way he can barter those shoes for bread which some one else has produced. So long as shoes are offered in a general market which has become stagnant with a surplus of goods, the worker who produced them may be no better off. But if another unemployed person has been set to work producing bread which the first worker needs and that worker is willing to accept shoes in exchange, the circuit has been completed, two men have been set to work and two effective demands created. This is, of course, but an extreme simplification of the whole mechanism of economic exchange, but it is *in the process of simplification* that we obtain a practical and effective means of stimulating employment.

The great advantage of such a simplified procedure in the creation of effective demands among unemployed people is that it does not rely upon the gearing up of our tremendous economic machinery with its involved price relationships to grind out employment for some of the millions now out of work. Wherever a balanced community exists—balanced at least as to the production of essential goods and services—there is the possibility of establishing a more or less self-contained barter exchange system in which unemployed persons can be set to work producing goods and services for their own needs. Each additional good produced creates automatically an effective demand when traded within the emergency exchange system. That system becomes, in effect, a small-scale self-operating unit which relies but little for essential goods and services on the gearing up of the whole regional,

national, or international exchange system. The scheme is, of course, retrogression in terms of the advance which we have made toward a highly interrelated economic society with division of labor on a huge and complex scale. But that highly interrelated mechanism, though normally efficient, has become useless for the present to those now unemployed. If a simpler mechanism affords some return for work done, then it cannot be lightly disregarded by those to whom the larger system has been more kind.

While these means of affording gainful employment to the unemployed may be effective if remaining on a purely barter basis, many of the plans now in operation use some form of special credit machinery. The method commonly employed has been that of issuing barter credits or coupons to those workers producing goods or services approved by the administrative officers of the emergency exchange established. Such credits or coupons are to be used in the purchase of goods and services produced by other workers under the supervision of the exchange. The use of such barter credits has been found to simplify greatly the exchanging of various types of products which soon become available when many workers are given employment.

This method of stimulating employment through the direct exchange of goods and services among the otherwise unemployed might seem an idle dream if it were not developing as a very tangible fact in many scattered areas throughout the country. Tens of thousands of unemployed workers have formed various sorts of barter exchanges for the conversion of labor into goods and services necessary for livelihood. The mechanisms set up vary from the most tenuous, informal schemes for direct exchange to at least one relatively elaborate chain of exchange depots using barter coupons to facilitate trade. Already some indications in the use of barter exchange have appeared in more than thirty states. The most highly developed projects center in western states, in the Rocky Mountain area of Utah, Idaho, Colorado, and Arizona, in California and in Washington.

The great problem faced by the barter exchange movement, if it is to become effective on any large scale in the stimulation of employment, is that of organizing exchange systems in the larger cities which are distant from food-producing areas and where great concentrations of unemployed are found. With many highly specialized industries and services, such cities offer a far more difficult field for the development of barter exchange than the balanced communities found in less densely populated parts of the country.

The most promising proposal for the development of barter exchange in such urban centers is that outlined by Professor Frank D. Graham

in his recent book *The Abolition of Unemployment*. Professor Graham suggests the formation of an Emergency Employment Corporation which will serve as means for placing unemployed workers in idle or partially idle manufacturing and food-producing enterprises to make goods for their own consumption. The Corporation would not run these enterprises itself but would contract with the present owners and managements for the use of plants and equipment and the direction of the workers placed. Cash would be used as little as possible in compensating the owners and managements and instead they would be given a share of the goods manufactured. Labor would be paid entirely in consumption certificates issued against the goods they produce. With a balanced group of enterprises in the system, these consumption certificates could be used by the workers in meeting most of their essential needs such as food and clothing. Even though agricultural and mining areas were at a distance, through the Employment Corporation foodstuffs and raw materials could be obtained on a barter basis from subsidiary exchanges established in such areas to be prepared and manufactured in the urban centers.

Wherever cash is required for the payment of rents or utility charges, certificates could be sold for what they would bring. As long as such certificates are issued only against goods actually produced under the scheme, their purchasing power will be maintained sufficiently to clear the market of the goods so produced. In order to speed up the use of the certificates in the purchase of such goods, Professor Graham proposes that they bear a cumulative discount in value month by month until cleared through the Corporation. Since most certificates would be issued in return for labor furnished by those otherwise unemployed, there would be little likelihood of hoarding with the accompanying retardation of the flow of goods from producer to consumer such as exists in our present money economy.

The evidence that self-help through barter exchange is a scientific method of stimulating and creating employment is accumulating rapidly. If economists and business men will concentrate some attention on facilitating its use, there is real hope that thousands of unemployed men and women will be aided in regaining the self-respect of securing a livelihood for themselves and their families through their own work.

DISCUSSION

By Willis Wissler

The purposes explicit in Professor Graham's plan are admirable—they propose to relieve distress now and here by giving disemployed workers access to means of self-sustenance. Assumptions implicit in his proposals are perhaps less acceptable:

1. That the paralysis of industry is a consequence of monetary defects which in a primitive barter plan can be avoided.
2. That the creation of an emergency production plant parallel to existing idle enterprise need not alarm business men.
3. That employment is the indispensable means to life, and that the multiplication and spreading of employment can, by the mere act of providing purchasing power, (a) reduce excess inventories; (b) revive markets; and (c) restore society to self-sufficiency under traditional laissez-faire.

Because concealment is more difficult under a system of primitive barter, there are many who allege that the primary source of depressions must lie in the monetary system. They seek to show how diversions of the circuit flow of money from consumption to production uses involve shortages in consumer purchasing power, which must leave goods accumulating at an accelerating rate into "frozen" inventories.

This popular assumption quite overlooks the fact that all investment flows, through expenditure for the creation of capital assets, into consumption channels: wages and salary payments to construction workers.

Does not, indeed, the initial difficulty lie back in the circumstances permitting the accumulation of incomes beyond individual enterpriser needs whence spring localized overinvestments?

Turning now to the barter system as a preventative of this radical difficulty in our system of private enterprise, let us ask ourselves searchingly: Does it hold out any guarantees against the development of like defects? One might nastily ask: How did this vicious capitalistic order of private enterprise ever emerge from the primitive barter under which we once so innocently operated?

It is not fair to Graham's thesis to cite the futilities of mutual exchanges dating from Weyland's "Labor Exchanges" in the depressive nineties down to the ultra-modern "Antioch Plan" of today. These fail from the incorrigibility of human selfishness sedulously educated "to buy cheap and sell dear." While the plan of true barter *via* bookkeeping can and does work, it does so with mechanical frictions

which soon become, under the complication of our modern socio-economic order, prohibitive to its universal use.

What is there in these money substitutes—whether credits or debits—to be liquidated in goods, which could not right now be fully and conveniently accomplished by bank credit loans, secured in the goods created, written on to the bank's books and drawn against by checks (elastic "transaction money" with which we now transact 90 per cent of all business) *except* the possibility that the goods thus facilitated might not be saleable or sold. But does not this same exception menace the simplified barter exchange described by Graham? And is not this very contingency the essence of our problem of stabilization? *To change the mechanics of exchange cannot avail if the goods themselves prove unexchangeable.*

The essence of the problem we conclude lies not in the monetary mechanism but in the effective ratios between goods and the effects of adverse ratios in a poorly articulated yet sensitively interdependent system of individual private enterprise.

Of Graham's second assumption—that his barter plan need cause no embarrassment to our contemporary system of private enterprise—little need be said in refutation. If half of the employees of a factory took over the idle part of the factory, the manufacturer operating the remaining part would hardly consider himself unaffected if this self-help "production unit" produced for profit. He would properly urge that the unit operate on a non-profit basis—not, to be sure, from any doctrinaire disapproval of profits—but because no profit can be attained except by sale of output to others than those who produce the output. This the dullest business man can at once perceive. Yet when we turn to the second half of Graham's dual project, we are blandly assured that this enterpriser can market an excess of output over and above production costs for a profit elsewhere. And where, pray, under the universal adoption of this plan, could that "elsewhere" be?

We seem brought to the inescapable conclusion that an industrial order in equilibrium cannot function under a profit economy. "Profitless prosperity" is indeed the first-born of technology and promises to be the sole heir to that superannuated business régime which thus far has been society's best bet for sustenance.

Let us now briefly scrutinize the central thesis: That employment is indispensable to the restoration of a balanced prosperity, and that for the way out of crises all that is needed is enough enlargement of employment to provide the requisite purchasing power to absorb that congestion of inventories which has come to constitute the core of crises.

When it is argued that employment can provide the requisite purchas-

ing power to liquidate "frozen inventories," it appears that no thought has been given to the fact that employment means not only more and new purchasing power—it also means new and more goods. Thus, this prescription may be characterized as calling for a series of "shots in the arm," each successive one of which can, by increased doses, give relief up until the last! Employment can serve the proposed end only as it is non-productive. Indeed, a good world war could do admirably, were it not become so much a business enterprise leaving behind capital accumulations—war babies upon our door step—to plague us.

To all this perverse insistence upon consumption through work alone, are we driven by our blind insistence upon truncating the irresistible forward thrust of industrial evolution? We see employment as the indispensable access to consumption because we fail to perceive that we stand upon the threshold of a new social concept as to the functional rôle of industry. Generated in a world of scarcity, industry has been little better than an anarchic conglomerate given a fortuitous semblance of solidarity by the acquisitiveness common to all private competitive enterprise.

Is it not toward a new social mode appropriate to a world of plenty that we should now be turning our faces? If so, our problem is infinitely more than the short-run emergency one of giving folks access to sustenance by pseudo-employment, charity or doles. It is the problem of discovering the means for effecting transition from an obsolescent socio-economic order of scarcity to a new order of plenty in which industry will have to be whipped together from an incoherent conglomerate of individualistic techniques into an organic unit, functionalized and institutionally integrated, competent to support society at an ever increasing rate of cultural growth.

AGRICULTURE: ILLUSTRATING LIMITATIONS OF FREE ENTERPRISE AS A REMEDY FOR PRESENT UNEMPLOYMENT

By Mordecai Ezekiel

The two preceding papers were concerned with temporary relief rather than permanent correction. I will attempt to show elements in agriculture which are partly responsible for present unemployment, and to indicate steps needed to clear the way for lasting recovery. The facts are neither new nor startling. The only new element is in trying to view recent farm developments as a whole.

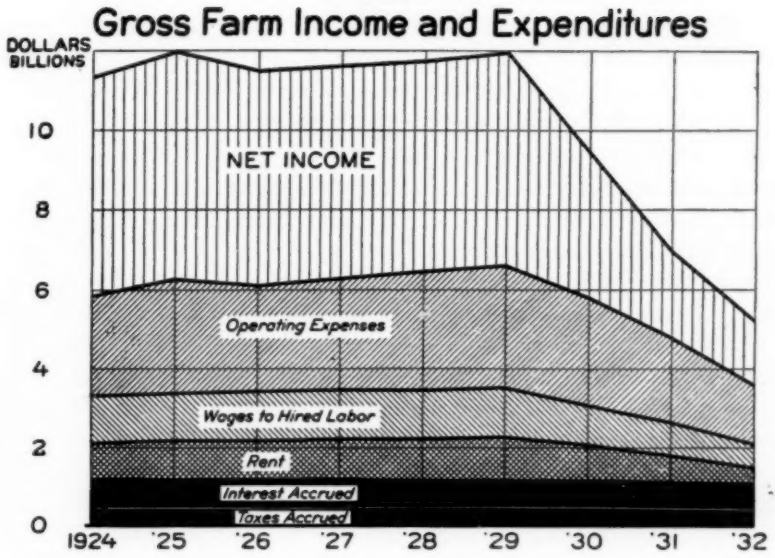
Before this depression, perhaps one-quarter of all urban workers were producing goods and services for farm consumption. Incomes of farmers have fallen much further than have the prices of urban goods and services. Farmers can buy less; many city workers who previously made products for farmers are now without jobs. Perhaps half of our present unemployment is associated with the farmer's reduced ability to buy. Suggestions as to ways to strengthen the farmer's purchasing power are, hence, of real significance as remedies for unemployment.

The depression has forced down the prices of farm products more rapidly than farmers could reduce production expenditures. Gross farm income fell from 12 billion dollars before the depression to just above 5 billion in 1932 (Chart I). Interest and taxes hardly declined at all; rent, labor, and cash production costs fell, but not so much as farm prices. The balance available for the purchase of things for the family consumption declined by two-thirds, from 5 billion dollars in 1928 to about 1½ billion in 1932.

Present low farm prices are not due to corresponding reductions in production costs; if they were, they would not be accompanied by such severe reduction in net income. If, however, they represent a temporary oversupply, they would be corrected by the normal operation of economic forces, for production would tend to fall and consumption to rise, until a new equilibrium was established. So runs the familiar statement, based on certain specified assumptions as to free competition, mobility, etc. Actual events may differ from expectations, either because the theory is wrong or because the assumptions are not fulfilled.

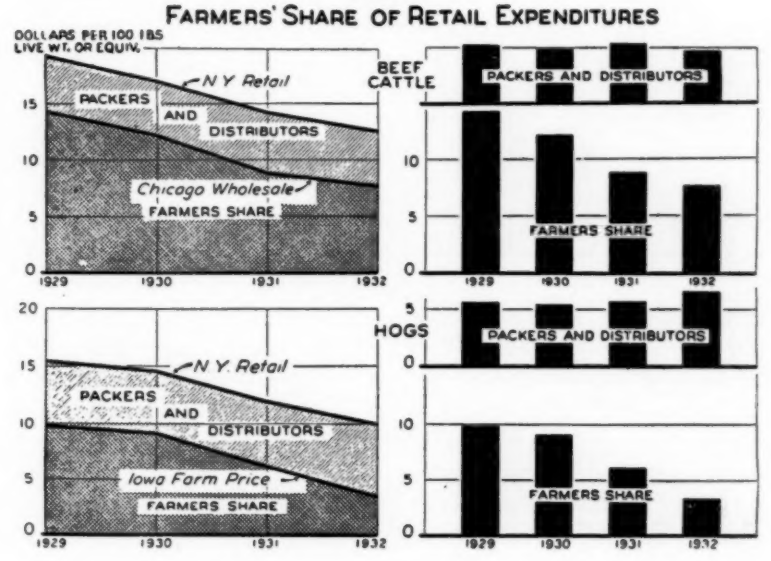
Prices paid by consumers have not fallen as fast as prices received by farmers. From 1929 to November, 1932, farm prices fell 61 per cent. Retail prices of food fell 36 per cent. National income as a whole fell by about 40 per cent, and cash incomes of city wage-earners (includ-

CHART I



ing distribution, transportation, and manufacturing) fell about 45 per cent. The reduction in retail food prices was less than that in urban income; instead of being stimulated to buy larger quantities, city workers could not buy so much as formerly.

CHART II

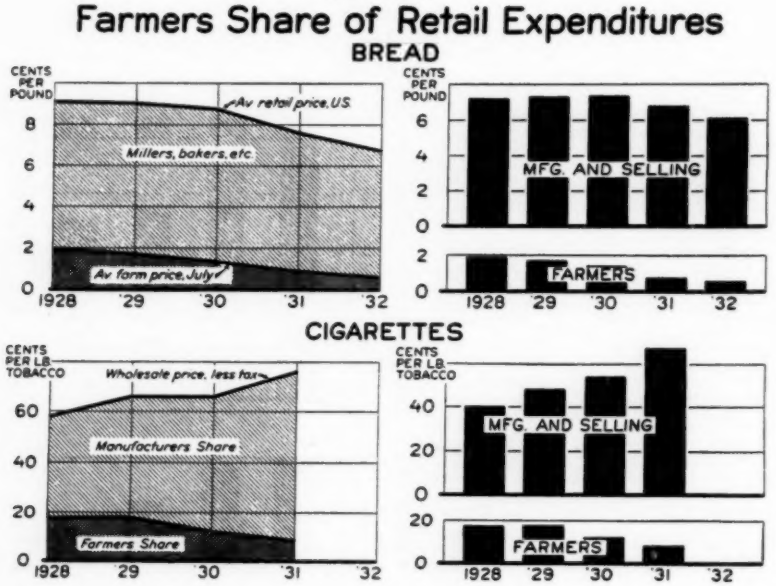


It is rigid intervening costs which have prevented retail prices from following farm prices. From 1928 to 1932, freight costs per ton-mile fell but 2 per cent. Overhead expenses in stores have been reduced but little. Wage rates have fallen less than number of hours worked—in food industries and wholesale and retail trade, 17 to 19 per cent decline in rates per hour, 20 per cent or more decline in hours worked. Urban incomes have contracted, without selling costs-per-unit being correspondingly reduced. Because of maintained intervening costs during periods of rapid decline, retail prices never reflect proportionately the drop in wholesale prices. The unparalleled extent of recent price declines has greatly exaggerated this situation.

The farmer's share of the consumer's dollar has been markedly decreased. The farm income from 100 pounds of beef was cut in half from 1929 to 1932; from hogs, it fell from $10 to $3 (Chart II). The margin for processing, transporting, and distributing beef fell only slightly, and for hogs, it actually increased.[1] The wheat producer's share of the retail bread price fell from 1.9 cents in 1928 to 0.6 cents in October, 1932; the share retained by bakers, millers, transporters, and distributors fell from 7.2 cents to 6.1 cents (Chart III). The farmer

[1] The retail prices of hog products are for New York City. Prices for the country as a whole have fallen somewhat more, so that retail margins elsewhere show real reductions. The available data do not cover adequately the cheaper cuts of fresh pork. These charts should therefore be regarded as showing only the general situation, and not as any exact measure of distributing costs.

CHART III



lost 1.3 cents out of an initial share of 1.9 cents; other agencies lost 1.1 cents out of an initial share of 7.2 cents. No wonder farmers feel they are bearing an undue share of the burden of the depression!

In cigarettes, the situation is even worse. From 1928 to 1931, the price of cigarette tobacco fell by half; the selling price of cigarettes advanced steadily. Manufacturers' gross margins increased over 50 per cent; yet wage rates paid in the industry were reduced nearly 20 per cent. Net profits to manufacturers steadily increased. Increased retail prices in the face of reduced consumer buying power did not stimulate sales; less tobacco was consumed, supplies were further piled up, and the situation of the tobacco producer was made even more unfavorable.

These four products illustrate the situation which is chronic throughout agriculture. Rigid intervening costs have prevented the reduction of retail prices in line with reduction in farm prices; low prices to farmers have not meant low prices to consumers; and consumption has not been stimulated.

Even reduced retail prices might not have stimulated much increased consumption. The demand for agricultural products *as a whole* is markedly inelastic. An individual's consumption of food is limited by physical needs and dietary habits; low prices could stimulate little increase in the total quantity consumed, but might produce some shifting from low-priced to higher-priced products such as vegetables, meats, and butter, which represent more labor or land per calorie. The consumption of cotton reflects industrial activity more than prices. Products such as tires, automobile tops and upholstery, belting, conveyors, etc. account for from one-third to two-thirds of our domestic consumption. Such consumption can not increase much until industrial activity as a whole increases. Both for foods and textiles, consumption of farm products is unlikely to show large increases even if retail prices were reduced; but it might regain previous levels.

In foreign markets, the situation is even less in accord with theory. Tariffs, import quotas, milling regulations, exchange controls, and subsidies to domestic production, all have been increased as prices have fallen. Prices of farm products in the importing countries have been maintained; our low prices have been prevented from stimulating increased consumption abroad. Instead, the high interior prices and subsidies have stimulated increased production of wheat, hogs, and other food products; low prices on world markets have been accompanied by increased production and decreased consumption in importing countries. This situation, the reverse of what should happen under free competitive conditions, has accelerated the growth of unsalable

surpluses in exporting countries, and is one of the major factors responsible for the continued price declines on world markets.

The foreign countries are not alone responsible for this situation. The national economic policies of the United States, in erecting high tariff walls, in insisting on the payment of war debts, and in forcing export sales by heavy foreign loans, were elements in creating the unbalanced world situation. It was partially the pressure produced by our policies which forced European countries to take the steps to protect themselves and their farmers. Now we and they alike are ensnared in the consequent chaos.

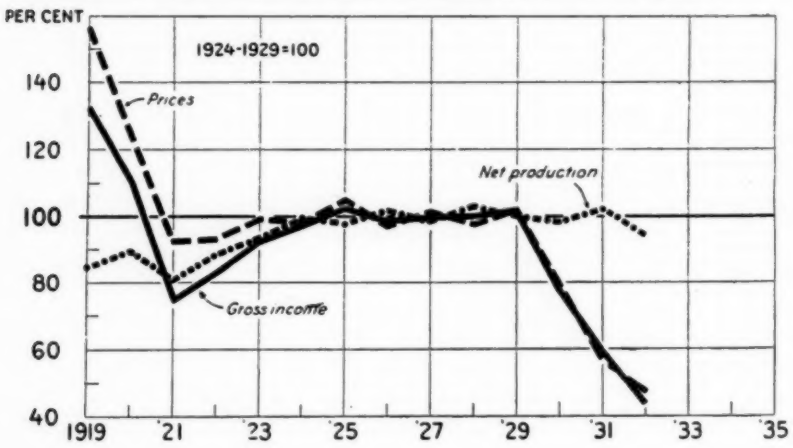
Low prices of farm products have not stimulated increases in consumption at home or abroad. On this half of the problem, the assumed "automatic readjustment" has as yet not been in evidence.

It is not to be expected that low prices for all farm products should materially reduce production. The individual farmer can see no influence of his small output on the price. He must produce as much as he can, so that increased output, times the apparently unchanged price, shall yield enough to pay at least taxes and interest. Even if he loses his farm, he or some other farmer takes it over and keeps it in production. Six million farmers, acting as individuals, can not readjust their production as if they were all directed by some giant corporation or central authority.

The physical volume of our farm output has shown little decline (Chart IV). According to the Department of Agriculture's index, the

CHART IV

Indexes of Net Agricultural Production, Prices, and Income, United States, 1919 to Date



volume was maintained at practically the same level from 1925 to 1931. There was a slight decline in 1932, largely in response to a low cotton yield. The change in total crop acreage has been very slight; only 1.4 per cent reduction from 1929 to 1932.

Some shifts between crops have taken place. From 1929 to 1932, wheat acreage seeded fell 9½ per cent, partly due to unfavorable weather conditions; cotton acreage, 12.6 per cent. High cotton yields in 1931 offset acreage reduction, and helped maintain surplus stocks. Other southern products are now so low in price that no further reduction in cotton acreage is to be expected. Crops for farm use showed remarkable increases, especially in the South. Peanuts, cowpeas, sweet potatoes, and sorghums increased 40 per cent; corn and hay acreages increased in regions which previously imported food and feed. Truck crops for canning decreased over 400,000 acres, or 35 per cent; but truck crops for market increased almost 200,000 acres. In general, production of specialized or perishable crops for long-distance shipment declined; crops for home subsistence or for nearby or local sale increased.

These geographic shifts in production, in response to the present high transportation charges, are building up new agricultural industries in areas where they can not be maintained once a more normal balance between incomes, prices, and transportation charges has been reëstablished. New commitments are being made which will prove unprofitable later on, and which will show up as new maladjustments to be solved when normal geographic and regional specialization once more becomes profitable.

Livestock production has been increasing, under the stimulus of cheap prices for feeds. The depression happened to catch the beef cycle at the low-production extreme. Widespread droughts reduced corn production in 1930 and 1931, and retarded livestock expansion. Now hogs, beef cattle, and perhaps dairying are set for increased production; the next two or three years may see the same general declines in relative prices of livestock which followed the similar period of low feed prices in 1920 and 1921.

The surge of urban unemployed back to farms is largely a temporary phenomenon of the depression. While giving some relief to the unemployed, this movement tends to maintain production of basic crops and to increase overproduction of truck and other cash crops.

The shifts between various crops, and the slight reductions which have taken place in output, have been insufficient to restore equilibrium. Production has continued to exceed consumption in many products; unsold surpluses of durable products have piled still higher, and the whole structure of farm prices has continued its downward trend.

Low farm prices over the past three years have not produced effects which would solve the situation. Falling prices have been accompanied by falling consumption and by maintained production; surplus supplies have become heavier. The equilibrium between production and consumption seems ever farther off and less attainable.

Competitive readjustments have not been free to work as assumed in the theory. Points at which public or monopolistic agencies have intervened in the economic mechanism to prevent readjustments from taking place have already been indicated. It is very doubtful if emergency action, by barter, public building, or otherwise, will increase consumption, strengthen buying power, and raise price levels enough to start activity to functioning again, unless these frozen situations are first corrected.

We must eliminate the artificial restrictions on internal trade, by readjusting debts to the new price level, by lowering freight rates, by bringing down rents, by reducing fixed wages per hour but increasing hours worked, so increasing employment and the total income of wage earners. These steps will pass on to consumers the reductions in farm prices, stimulate increased consumption and renewed activity, and reduce the cost of living in line with reduced incomes. Reductions in prices of urban products will increase the quantities which farmers can buy. In foreign markets, we must lead the way in reductions in trade barriers. The world stands ready to work with us; but we must reduce our tariffs where they count, so that Europeans and others can sell us more of their products, and in turn will have more American dollars with which to buy our products. Finally, we must, if we can, curb the monopolies which have maintained prices in this country, and so prevented workers from absorbing the increased output which improved techniques were providing.

Such steps will clear away the restrictions which have prevented economic readjustments and open the way for restoration of world economic activity. Progress will be slow; many months and even years may be needed to carry through necessary political steps and subsequent economic readjustments. Meanwhile, the markets are burdened by excess supplies of farm commodities, while the increased farm productive capacity in consuming countries is unlikely to be reduced or diverted until more profitable alternatives have been developed. We still face for several years the probability of agricultural output above the quantities which the world can use. During this intervening period special social action may be needed to correct the oversupplied situation. Legislation aimed at the reduction of farm output is now being widely discussed. Other steps—to eliminate

the trade barriers, to adjust debts, to correct inflexible prices and charges—are far more important in their long-time consequences, and are essential to real recovery. If it is generally recognized that the special agricultural legislation is only one step in this broad program, if the agricultural legislation is accompanied by vigorous action along the other lines, it will help to start recovery; but if it is used as a panacea and substituted for vigorous correction of the underlying causes of the depression, it will be of little permanent value.

Conclusion.—Increase of employment among city workers depends, to a considerable degree, upon increase of incomes among farmers. Farmers' incomes and prices have been drastically reduced by excess supply and by falling consumer purchasing power. Correction of this situation through the normal economic response to low prices, increased consumption and reduced production, has not even begun. Interventions of all sorts, fixed charges, rigid price structures, monopolies, and restraints on international trade, have impeded and prevented readjustments. These restrictions must be modified and removed before agriculture can become prosperous and before city workers and farmers can exchange freely with one another. Emergency farm relief measures, directed primarily at controlling production, will help initiate the readjustment, but they must be accompanied by major changes in our economic structure and our international economic policies if lasting and substantial recovery is to be achieved.

THE PRACTICAL APPLICATION OF CONSTRUCTION CENSUS STATISTICS

By Alanson D. Morehouse

The basic statistics of the construction industry collected for the first time in connection with the Fifteenth Decennial Census are based upon the business operations of the year 1929. As this was an average year in the industry, not reaching the height of the construction boom attained between the years 1926 and 1928, nor the low points of construction before or since, they may be considered as furnishing an approximate cross-section of the industry at any period of normal activity. This being true, the fundamental relationships within the industry may be assumed to continue and be applicable to any normal construction year within a reasonable period of time.

> Accordingly, some of the most significant relationships which obtain in the construction industry at a period of normal activity are brought out (in the United States Summary) with the idea that these examples may suggest to the reader the direct application of these statistics in the solution of his own problems. For the contractor the points of interest are manifold, because the aspects of his own position in the industrial world are many. He is, of course, first of all a constructor, but in a minor degree he is also an estimator, a bidder, a financier of construction projects, an employer of labor, and a purchaser of materials. Every one of these aspects of his activity are covered in the reports of the census of the construction industry for each state and for all cities of over 100,000 population. Much material is also included in the reports which may be used to great advantage by the manufacturer or distributor of construction materials and by those interested in the many problems affecting construction labor.[1]

These statistics should also prove of value to statisticians and economists for analyzing the construction industry in relation to the present economic conditions.

In applying these statistics several controlling factors must be firmly fixed in the mind. Primarily the census covered only the *contracting group* of the industry and not the architectural, engineering, or materials groups nor the construction work performed by industrial concerns, public utilities, municipalities, or common carriers which maintain construction departments for new construction, or for repair and maintenance of their own property. However, such part of this last-mentioned work performed by contractors for these concerns or agencies is, of course, included in the census.

Furthermore, to facilitate the taking of the census, complete detailed

[1] *Construction Industry: Summary for the United States*, p. 23, Bureau of the Census.

reports were required only from those concerns which did a gross business of $25,000 or over during 1929. Concerns doing a gross business of less than $25,000 were required only to state that fact and to classify themselves as to the principal type of work in which engaged. A sufficient number, disregarding this exemption, furnished complete reports, so that averages for the various items have been computed which may be projected to 100 per cent values by multiplying the averages by the total number of concerns reporting in this smaller-contractor group.

Another fact which must be stressed is that the basic figures relate to the *aggregate business* handled by reporting establishments and *not to the actual construction work* executed by them. These figures involve a duplication so that the gross figures must be reduced by the value of the work *sublet to other contractors*, to obtain the net value of construction work as paid for by the owner.

To be continually remembered also, is that the figures relate to the construction business done by the reporting concerns with *headquarters in a given area* (city, county, state, or geographic division) and *not to the work done in that locality or area.*

Of the larger-size group of contractors it was found that 17.6 per cent of their total business was done outside their home states.

As some concerns did not give details in full for some of the inquiries, it was necessary to resort to the sampling method of statistical presentation. In consequence the figures in all but the first two tables in the various State and Summary reports should not be taken as representing the total value of any item for a given area or class of establishments. Some column of figures, however, is included in each table, comparable to some column in tables 1 or 2, e.g. "value of total business"; or "wages"; or "cost of materials," so that any figures of the less representative tabulation may be projected to 100 per cent valuation, by simple ratio.

Still another reminder is that each concern was listed according to its principal type of work during 1929, as evidenced by the largest value reported for any type, many of these concerns, of course, engaging in two or more types of work during the year. In other words, a contractor reporting a business of $50,000 in Heating and Piping and $25,000 in Plumbing was listed as a Heating and Piping Contractor. Standard table 2 in the reports, however, gives the number of concerns doing each type of construction, consequently these total up to more than the total number of concerns reporting.

In all of the State reports and in the United States Summary there are 13 standard forms of tables, the first eleven in each case presenting

statistics for businesses of over $25,000 while tables 12 and 13 furnish statistics for businesses under $25,000.

The statistics may be broadly classified into five main groups: Those relating to (1) costs of construction; (2) construction equipment and labor; (3) types of construction work; (4) construction materials; and (5) the location of construction business.

Business valued at $6,250,266,665 was handled by the group of larger establishments during 1929, while the estimated business of the smaller-business group amounted to $1,035,453,579, making a total of $7,285,720,244. As a measure of the actual value of construction work executed, however, this valuation includes a certain amount of duplication, because the aggregate business of all establishments includes a double statement of that work which was sublet to other contractors. The reported and calculated total value of subcontract work let by all reporting establishments is $1,507,266,679, or 20.7 per cent of all *construction business handled*, thus making the indicated value of *construction work executed* by the forces of contracting establishments working under general contract, or directly for the owners, equal to $5,778,453,565.

Tables 1 and 2 give in every case the statistics for *all* the concerns involved in all types or in any type of construction, by location of main offices of reporting concerns, for state or city of over 100,000 population in 1930, table 1 giving in addition, such information by counties. In all except table 1, however, there appears the item "distribution not reported" so in order to estimate 100 per cent of any item in reference to the statistics reported for the number of concerns involved in that particular table, it is necessary to add to it, its proportionate share of the undistributed value.

Furthermore, in tables 3 and on, the number of reporting firms is less than the total number recorded in tables 1 and 2, as a fewer number gave full details, and, in consequence, the value of any item must be augmented proportionally, as previously mentioned, by use of some common sets of values in the table in question and tables 1 or 2, in order to secure an estimate of 100 per cent coverage for that item. To illustrate; New York reported an average monthly number of wage earners of 130,349 (average number derived from table 7 by dividing the sum of the monthly employment figures by 12) and a payment of wages of $288,182,125, giving an estimated average wage of $2,210.85 per wage earner. Dividing the total wages paid by *all* reporting New York concerns $318,537,000 (table 1) by this average wage, we have an average monthly employment of wage-earners of 144,079 for *all* reporting concerns. This method may be used to obtain reasonably

correct estimates not only for *average number* but for the *number employed in any month*, by all concerns. It may also be applied to obtain corresponding estimates for the average or seasonal employment by concerns engaged primarily in any particular type of construction work. Average employment figures in all cases apply to *full time employment* and as, in all probability, the average employment may not exceed six months in a year, the full-time-employment figures would be multiplied by two to obtain the total number of wage-earners who gain their livelihood *directly* from construction work, and average-wage figures, on this assumption, would be divided by two to obtain the real average wage. To be kept in mind is that the wage-earner figures are those reported as the "number employed on the 15th day of the month or nearest representative day." In editing the contractors' schedules, however, special care was taken to correct, by correspondence, any seeming discrepancies between number of men employed and gross wages paid.

Regarding the comparability of the Census construction figures with the F. W. Dodge statistics of contracts awarded it must be remembered that the latter cover actual awards which were made in the designated localities during 1929, including large privately planned projects built with the aid of subcontractors without a general contract. They only partially cover contracts for less than $5,000, and they relate principally to new construction work actually done under contract, although some remodeling and repair work within their cost range is also included. Work covered by contracts awarded might have been completed during the year in which the contract was let, or it might not even have been started during that year, or it might have been done in the year in which let as well as in the succeeding year or years. Statistics of contracts awarded are in effect a measure of *construction work started rather than that actually done* during a given year. Census figures, on the other hand, include repair work and small remodeling projects as well as large remodeling work and new construction actually executed during the year and whether or not the work was done under contracts awarded that year or during some preceding year.

Notwithstanding these possible causes for non-comparability, the Census figures representing the actual work done in the designated areas, as set forth in one of the special tables of "Construction in the United States, A Study of the Location and Agencies" by Mrs. I. Mansfield Spasoff, Associate Statistician, show a total for the 37 states and the District of Columbia less than 12 per cent smaller than the total value of contracts awarded. Furthermore, the percentage

distribution among the respective states is similar in both sets of figures and for a few states, identical.

In any attempt to correlate census construction statistics with the building permit figures of the Bureau of Labor Statistics the time or period of the execution of the work must be kept in mind. Building permit data however, only cover principal cities and much Federal or municipal work even in these cities, is not included in these figures. This is also true of the work in the suburbs outside the city limits.

As already mentioned, the census figures as presented in the standard tables, represent the gross business of the main office of the reporting firm, regardless of where the actual work was performed. In standard table 3 in every case this gross amount of business is broken down as to locality in which the work was executed, i.e. as to whether done in the home city, in the home state, or outside the home state. This last-mentioned part of the work is broken down in standard table 4 into the states in which the work was executed. In the study on Location of Construction Work, the work done in any particular state by local and outside-state contractors is combined so as to present the work actually executed in that state. Roughly, in most states, the amount of *work done in the state* approximates the work done in all localities throughout the United States by contractors with headquarters in the state.

In order to combine the figures of concerns with a business of less than $25,000 with those of the larger firms, apparently the closest approximation is arrived at by presuming that in each type of construction work, the proportion of the value of the work spent for labor or for wages is substantially the same for the smaller as for the larger concerns. Of the total of practically $4,795,000,000 worth of net work executed by the 30,597 larger contractors, 42.9 per cent was paid out for construction materials delivered on the job, and 30.6 per cent was for wages. As the estimated average business of the 113,799 smaller reporting contractors was $9,099, the *gross business* amounted to $1,035,453,579 and, assuming that little of the work was sublet, it may be taken as equivalent to *work done*. Therefore approximately $421,999,000 was expended for materials and $301,066,355 for wages which may be combined with the expenditures for materials and wages by the larger contractors. The same method, of course, may be used on this or similar data for these or other items for any area covered by the statistics for the larger concerns or for any particular type of construction firm. If applied to such items as salaries, equipment, contract bond premiums, etc., more care and discretion would have to be used in making the estimates on account of the smaller size of the

business, taking advantage of the detailed standard statistical tables as an aid to this judgment.

The question of cost and use of construction materials is too large to take up in the present paper, so reference must be made to the various State reports and the United States Summary for a detailed study of the subject. Standard tables 9, 10, and 11 in every case cover the statistics of this element of the construction industry. To make the statistics of easy application in determining the proportional part that each material forms of the total cost of materials, a percentage column is introduced in table 9. This shows, for example, that the value of the group of aggregates, sand, gravel, stone, clay, and cinders, constituted 10.4 per cent of the cost of all materials, and cement constituted 8.9 per cent. Another column indicates the cost of materials out of every $1,000 worth of construction work done. For the United States as a whole for all classes of construction executed by the 30,597 larger contractors this amounted to $428.72. Of this amount $44.79 was paid for the group of aggregates, $38.34 for cement, and so on throughout the list of 44 materials or groups of materials.

Construction Industry: Summary for the United States: Fifteenth Census of the United States, 1930, comprising some 171 pages (quarto size) is divided into five chapters, entitled respectively: (1) Inauguration and Scope of the Census; (2) Organization of the Construction Industry; (3) General Survey of the Construction Industry; (4) Statistics by States; and (5) Detailed Tables for the United States.

The first four chapters contain special tables numbered I to XLI inclusive, and chapter 5 contains the 13 standard-form tables similar to the State reports. These with the accompanying text, cover quite completely in summary form the whole field embraced in the Construction Census, except the location of the actual work executed. The Study on Location is appearing as a separate report or bulletin, but will be collected with the United States Summary and the individual State reports to form a separate complete volume on the *Construction Industry:* Fifteenth Census of the United States, 1930.

THE EFFECTIVENESS OF PUBLIC WORKS IN STABILIZING THE CONSTRUCTION INDUSTRY

By Corrington Gill

> The causes of the present depression, as far as the United States is concerned and as they have been alleged, are varied indeed. A chain of causes, or rather a combination of coacting causes, has probably worked to produce the present industrial depression in this country. . . . Probably no human device or combination of devices can be instituted powerful enough to prevent the recurrence of financial and commercial crises and industrial depressions, but this should not prevent men seeking devices which will mitigate the severity or shorten the duration of such calamities.

This statement was not made in 1931 or in 1932. It was published on March 17, 1886, as part of the Commissioner of Labor's first annual report which might well have been called "Industrial Depressions—Causes and Remedies."

Excessive building activity (railroads) in the early eighties, the Commissioner of Labor reported, preceded the depression of 1884–85 and this excess, he intimated, was probably a major contributory cause of that depression. He then pointed out the advisability of the Federal Government's exerting not only control over the amount of railroad building, but he also mentioned two important proposals; first, the advantages of increasing public works to offset the decline in employment, and second, the establishment of boards to control public works.

General acceptance of these two proposals has been slow in the 46 years intervening between 1886 and 1932, but there has been progress.

Before this progress is examined, perhaps it would first be advisable to define the terms "construction," "public works" and "stabilization," as here used, to eliminate the possibility of confusion.

The construction industry, in its broadest sense, includes any operation that produces a more or less fixed structure or alters the natural topography of the ground. Repairs and maintenance should also be classified as construction. This definition covers the construction and repair of buildings, roads, streets, bridges, river and harbor work, sewers, subways and similar work, but does not include the building of ships, movable machinery or railway rolling stock.

The term "public works" is easily defined as all construction performed by or for public agencies.

Defining "stabilization" is not easy. Too many people look on the word as a synonym for "fixation." Logically, therefore, "stabiliza-

tion" in this sense should not be used in connection with an industry whose sound future progress and development require flexibility. Some control of the volume of construction, however, is not only compatible with the best interests of the industry, but highly desirable from a social point of view. In the past, the *instability* of construction volume periodically accentuated, if it did not actually cause, some major industrial booms and depressions. It is the elimination of these extremes in the volume of construction that is referred to here as stabilization.

The construction industry, upon which many people look as the main cog in the economic machine, is certainly one of the major forces in our everyday life. More than two million men are employed directly by it during years of average construction, which means that four or five million men are given employment indirectly in the thousands of factories manufacturing materials and equipment used by the construction industry. All these goods must be shipped to the job, which means business for all common carriers. When the construction machine is working smoothly, these millions are enabled to buy homes, automobiles, radios, furniture, and all the other things, the purchase of which promotes increased industrial and business activity.

An analysis of the current depression, based on the Federal Reserve Board's data on manufacturing production, demonstrates conclusively that the industrial machine is slowed down primarily because of a lessened demand for durable products, such as steel, automobiles, lumber, cement, and glass, and not because of the smaller demand for non-durable products such as textiles, leather goods, foods, and tobacco. Mathematically, 75 per cent of the depression in manufacturing production, as measured by the Board's weighted aggregate in October, was caused by the smaller demand for durable products and 25 per cent by the lessened demand for non-durable products.

It can be demonstrated that the construction industry uses over one-third of these durable products directly. The importance of a relatively stable construction industry as an influence on general manufacturing production is apparent.

Officials of governmental units, as well as individuals in private life, must depend on available facts to form an opinion on the construction industry. The validity of these opinions will depend upon the completeness and reliability of the existing statistical data. For this reason, it appears advisable to mention, at least, the major types of factual data now available.

I. Volume of construction

A. Contracts awarded

B. Building permits
C. Shipments of construction materials
D. Cross section studies, such as the Census of Construction of 1929

II. Financing of construction
A. Municipal bond flotations
B. Corporate bond flotations
C. Loans of the building and loan associations, banks, life insurance companies, real estate bond houses, etc.

III. Construction costs
A. Composite cost indexes
B. Labor cost indexes
C. Material cost indexes

IV. Rentals
V. Vacancy and occupancy surveys
VI. Direct employment on construction
VII. Indirect employment on construction

Facts relating to employment on construction work are especially important in evaluating future public works programs. They consist of some nine state indexes of construction employment. Ohio, Pennsylvania, New York, Rhode Island, Massachusetts, Wisconsin, Illinois, California and Maryland now compile monthly data on construction employment. These state agencies coöperate with the Bureau of Labor Statistics in the Bureau's new compilation of building employment which was started two years ago. The Bureau, in October, 1932, received reports from more than 10,000 contracting establishments and recorded payroll data on 85,000 men. This index will be of increasing importance as more establishments report their employment.

The Federal Employment Stabilization Board is now compiling monthly data of direct employment on projects financed by the Federal Government. It is hoped that these figures will become available early in the coming year.

In an endeavor to measure the fluctuations of employment in the production of construction materials, the Board has compiled an index covering this type of employment. This index is based on monthly reports from the Bureau of Labor Statistics, adjusted to the Census of Manufacturers biennially. The index represented the fluctuations in employment of some 330,000 wage earners in 1929. An interesting picture of the location of this employment is presented when the distribution is shown by states. Of the persons employed in 1929, nearly 15 per cent were located in Pennsylvania, about 11 per cent in Ohio, 9

per cent in Illinois, almost 8 per cent in New York State, 5 per cent in New Jersey and over 4 per cent in California, Indiana and Alabama. This indicates that over 50 per cent of the materials used in construction were then produced in eight states. This applies not only to the six major construction material industries covered by the Stabilization Board's index, but also to their more comprehensive analysis of 25 construction material industries. A large public works program would benefit the states producing these six major construction materials, as well as the states in which the projects might be located.

If there is any practical way of preventing the extreme fluctuations, both cyclical and seasonal in the construction industry, it would go a long way toward eliminating the extremes in the business cycle, for it stands with food and clothing as any country's basic necessities.

There is a practical method of preventing extreme cyclical fluctuations within this industry. Advance planning of public works is the method. This is, of course, not a new idea. It has been advocated for many decades, but it was not until February, 1931, that the theory was put into actual large scale operation in the United States when the Employment Stabilization Act, providing for the advance planning of Federal construction, was passed.

Stated briefly, this Act has two main objectives; first, the preparation of detailed physical plans six years in advance with each of the construction agencies of the Federal Government and District of Columbia; second, studies determining the necessity for expanded or contracted programs. Many states and cities are now considering similar legislation and it is believed that it is only a matter of time before the many advantages accruing to governmental units from advance planning will be fully realized.

As most of the political subdivisions of this country have not yet inaugurated advance planning, an expanded public works program has been impossible during the current depression, except in so far as the Federal Government has been able to start projects already planned. The credit of most states and cities is at a very low level, as indicated by their inability to float securities. It should be noted, however, that the states and cities which kept their expenditure down during the past few years have been able to obtain credit at a low rate of interest. Proof that public works can stabilize construction must await the time when a large number of states, counties and cities are able to expand, instead of contract, their construction work during a depression, but evidence that this plan might be successful in eliminating the major peaks and valleys of the construction cycle is now available. This evidence consists of data showing two phases of the current construction cycle; first

the overexpansion of 1925–29 and, second, the consequent trough of 1931–33.

The high and low points in the construction cycle can be shown best by comparing 1928 with 1932. Construction expenditures have fallen from almost 11 billions in 1928 to less than 4 billions in 1932, as measured in dollars.

Construction costs have fallen from 100 to about 70 or 75 and the physical volume of construction has therefore declined from 100 in 1928 to about 55 in 1932. Employment in factories producing construction materials has fallen from 100 in 1928 to 41 in 1932. Here indeed is evidence of two extremes in a construction cycle.

The effect of an expanded public works program on the construction industry can be illustrated to some extent by assuming that states, counties and cities had been able and willing to follow the example set by the Federal Government during this depression. If this had occurred, the dollar volume of construction would have remained almost constant, while the 1932 volume, in physical units, would have exceeded 1928.

This assumes, of course, advance planning by *all* public agencies which is possibly too much to expect. On the other hand, if advance planning had been in operation previous to the collapse in private construction, these years of reduced programs, Federal as well as state, county and city, would have made possible an expansion in public works during 1931 and 1932.

The evidence clearly indicates that public works, through advance planning, can eliminate the extreme variations in the volume of construction and no plan to reduce the cyclical swings of industry can overlook this important fact.

THE PROBLEM OF ANALYZING LOCAL REAL ESTATE CYCLES

By Roy Wenzlick

Unlike other commodities, real estate is fixed in location. It cannot be taken to a favorable market. Active demand for apartment space in New York or Chicago has very little effect on rentals in St. Louis or Detroit. In no other field do local factors play so great a part in fixing prices and in modifying national cycles. The statistician who would concern himself with local real estate fluctuation has several advantages to start with. The first and greatest of these is the care which has necessarily been given to preserve all records involving titles and the transfer of real estate. From the actual copies of deeds it is possible, if one is willing to take the time, to reconstruct with a mathematical accuracy the cycles of activity entirely ignored at the time.

Chart I shows these cycles of real estate activity in Greater St. Louis from 1868 to the present. The surprising thing this chart reveals is that the frigidity of real estate in this depression is no greater than it has been at many times in the past. The length of the real estate cycle, as compared to the superimposed general business cycle of Colonel Ayres, is quite interesting. Real estate has moved in cycles varying in length from fifteen to seventeen years, while general business has moved in comparatively short cycles. It is also interesting that real estate activity has increased with great rapidity at the beginning of each cycle, has reached its height and then gradually subsided over a long period of years. It is quite apparent that the present period of inactivity is not yet completed.

Chart II shows the cycles of mortgage foreclosures in Greater St. Louis for the same period. Here, too, there is very little relationship between the foreclosure cycle and the general business cycle. In the late nineties, business was very active but foreclosures were high. Again in 1916, 1917 and 1918, war prosperity sent business considerably above normal but foreclosures mounted steadily to a peak. The very high peaks of 1878 and the present are caused by the change in the purchasing power of money which has increased the burden of debt and made foreclosure in many cases inevitable. The most hopeful indication at the present time is the fact that the rate of increase in the upward trend of foreclosures has been decreasing for several months and has now turned downward. This chart and the preceding one have been corrected for the growth of the city. Various studies have shown that the best correction is the number of families rather than the number of individuals

CHART I

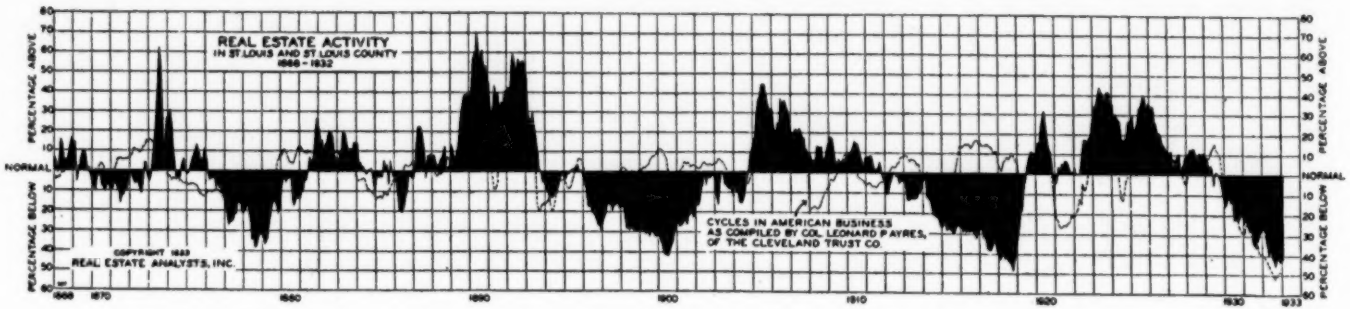


CHART II

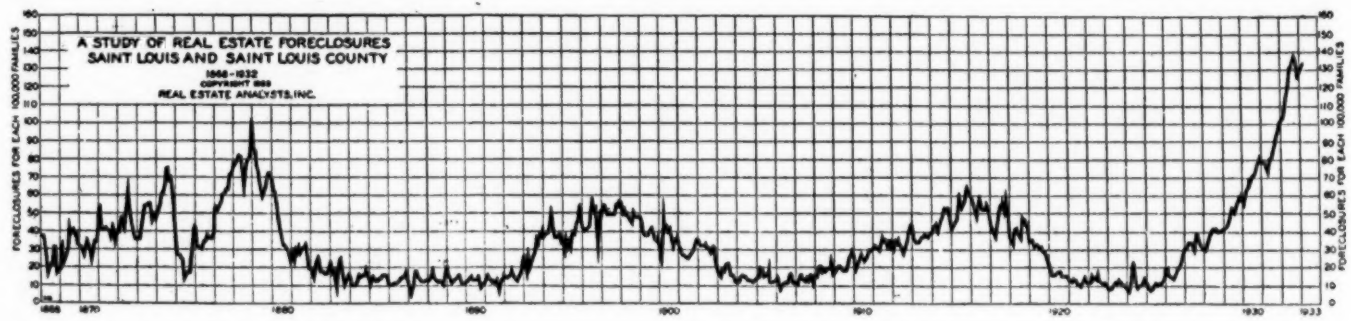


CHART III

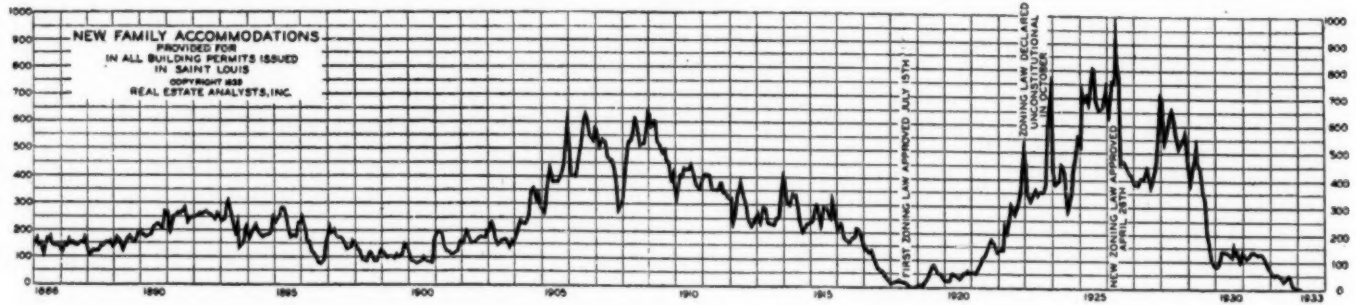
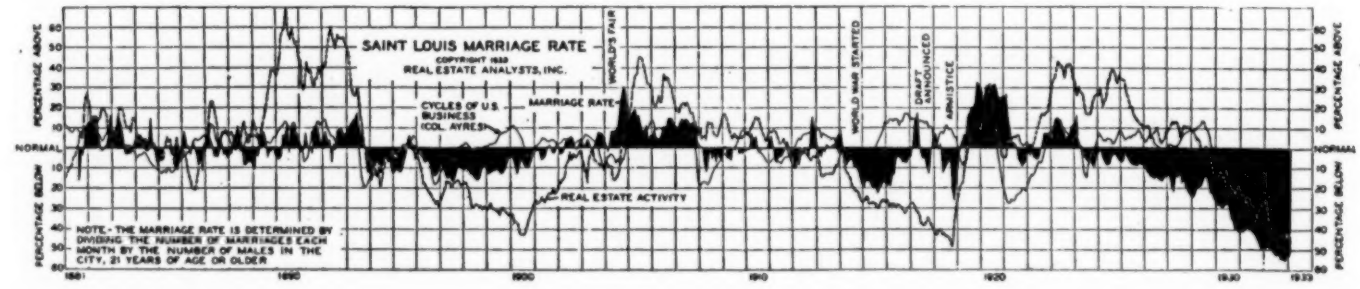


CHART IV

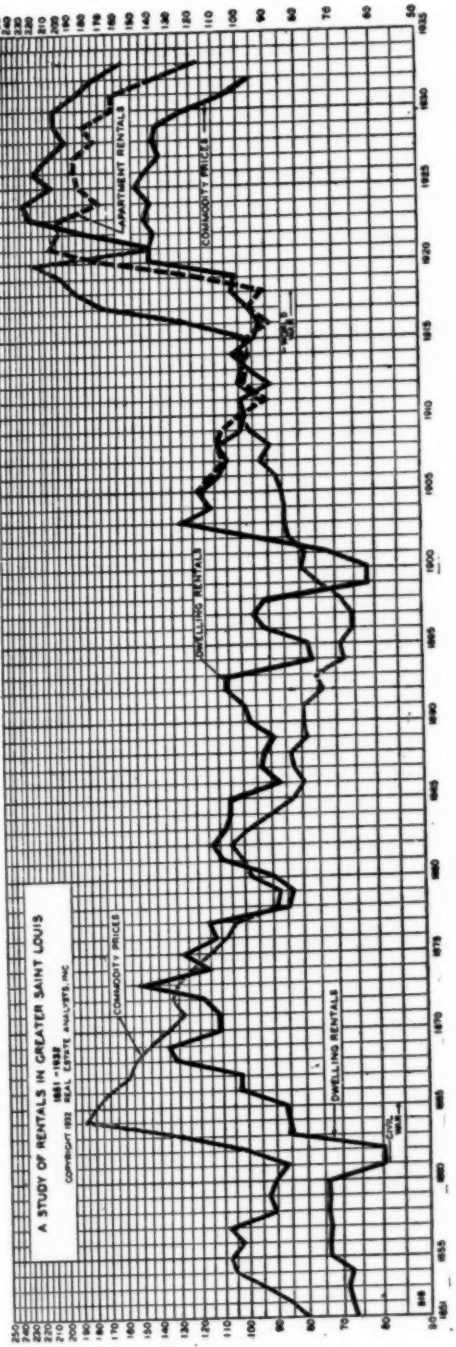


in the city. The relationship between the number of individuals and the number of families has changed materially during the period of our studies. At the present time, because of the decrease in the size of the family, a thousand individuals require 48 per cent more dwelling units than they did eighty years ago.

Chart III shows the number of new family accommodations provided for in all building permits issued in St. Louis from 1886 to the present. Construction, indicated either in money or permits, is not a measure of supply. Such figures include all buildings from churches, apartment hotels, to cottages and have no direct relationship to the actual families accommodated. The compilation of the data charted here required individual analysis of each building permit issued as far back as records were obtainable. It will be noted that the construction cycle corresponds in a general way to the general real estate cycle. That the amplitude of the swings is getting greater is probably due to the increased difficulty in recognizing an oversupply as quickly in a larger city as could be done when the city was smaller. The fact that a larger number of accommodations has been built in each succeeding period, in spite of the fact that the city has been growing at a slower rate, is probably explained by the fact that as the city grows older, a larger and larger proportion of its buildings will fall in the obsolete and dilapidated class. If the useful life of a residential building is estimated at fifty years, it is clearly apparent that during the first fifty years of the city, there could be no buildings more than fifty years old. In 1880, there could not have been more than one thousand, as there were just about a thousand families in St. Louis in 1830, fifty years before. From 1880 to the present, the number of dwelling units passing the fifty-year age mark in St. Louis has been increasing steadily until at present it stands at 225 per month. By 1940, this figure will exceed 275 and it will remain at this figure until 1970, when it will drop back to 200 a month. Undoubtedly, replacements will form a larger and larger part of building operations in the future.

Chart IV is a study of the marriage rate in St. Louis per 10,000 males twenty-one years of age or older. Superimposed on the black areas are two lines showing real estate activity and general business activity. A very direct correspondence can be noticed in many places on the chart between real estate activity and marriages. It is quite interesting that the present marriage depression started in 1924 and that in the period from 1924 to the present, the accumulated shortage of marriages in St. Louis, which would normally have taken place, has amounted to more than 17,000. At the present time St. Louis is losing more than two hundred families a month through the excess dissolutions of families

CHART V


A STUDY OF RENTALS IN GREATER SAINT LOUIS
1881 - 1932
REAL ESTATE ANALYSTS, INC
COMMODITY PRICES
APARTMENT RENTALS
COMMODITY PRICES
DWELLING RENTALS
DWELLING RENTALS

by death or divorce over new marriages. When conditions improve, undoubtedly a portion of this " marriage reserve " will result in a marriage boom, which will again result in a sudden increase in demand for housing accommodations. This partially accounts for the rapid increase in real estate activity at the beginning of each cycle.

Chart V is a study of the fluctuations in advertised rentals as computed by reducing all classified for rent advertisements to an average rent per month per room basis. While we realize that advertised rental and actual rental are not always the same, we believe that this chart, with certain allowances for these discrepancies in depression periods, very closely approximates rental fluctuations. It will be noted that from 1904 on, the rentals have been separated by a solid and a dash line. The solid line represents ordinary residential rentals. The dash line, apartment rentals where heat is furnished. A third line appears on this chart showing the fluctuation of commodity prices during the same period. Undoubtedly rentals are affected directly by two things: first, the relationship of supply and demand; and, second, the variations in the purchasing power of money as reflected in the changes in the cost of living and in construction costs. In a general way, the purchasing power of money has had a greater effect on the rise and fall of rentals than has an oversupply or a shortage of living quarters. The rentals have gradually gained on commodity prices, due, we believe, to the more elaborate nature of the housing required. Bathrooms, furnaces and electrical refrigeration, as well as the increase in real estate taxes, have made it impossible to construct and operate buildings as cheaply as their simpler prototypes.

The charts illustrated here have been selected from the many long term studies which have appeared during the past year in the *Real Estate Analyst* (St. Louis Edition). Space does not permit any longer explanation of their peculiarities nor the inclusion of others of equal significance.

THE OUTLOOK FOR 1933

By Lionel D. Edie

A year ago, a financial crisis was in process and the most vital question was when the Federal Reserve would take decisive steps to combat the liquidation mania. This year opens with a fair degree of financial stability, and with large excess reserve balances of member banks, and the most vital question is when the Federal Government will take steps definitely to balance the national budget. The national deficit is now a major obstacle to emergence from the stagnation phase of the depression. A sound fiscal situation in Washington is needed to prepare the way for expansion of credit and trade. The pressure of easy money is a major sustaining force for 1933. There is an underlying situation which may again break out in a new wave of interior bank failures but there is a basis for expecting that any such development will be prevented from running to crisis proportions.

The normal balance of payments influence should continue the tendency of the last six months for gold to move toward the United States.

The physical volume of business and the broad index of wholesale prices are, month by month, closing the gap from a year ago. Unless distorted by shock factors, the gap in year ago comparisons should be almost wholly eliminated by the middle of 1933.

The new year will be characterized by important readjustments in the debt structure of the United States. This will take the form of curbing the increase of Federal debt; of individual adjustments of urban real estate mortgages affecting roughly 10 to 20 per cent of such outstanding mortgages; of reorganization or receivership of probably less than a dozen railroads having top-heavy capital structures and heavy bond maturities; and of readjustment of one to two billion dollars of senior farm mortgages.

There is much talk of inflation but as yet there is no real inflation, and I do not expect to see any during the first half of 1933.

There will be great popular interest in political developments in 1933, both domestic and international, but fundamentally I do not consider these nearly as important as the purely economic factors. I do not agree with those who believe that politics will rule economic factors during the year. Politics are a distraction for the crowd.

If there is not some firming of farm commodity prices by the next harvest season, there is danger of real currency inflation in the second half of the year. However, the second half is so much in the realm of conjecture that I leave it to bolder spirits.

We have probably plumbed the approximate depths of the depression, but we cannot yet compute its probable duration.

During the past few weeks, the depression has reached a phase where the observer should abandon unqualified pessimism.

The most crucial decision in 1933 will probably have to be made in the second quarter of the year. At that time, and in light of knowledge then existing, one will have to make up his mind whether the second half of the year will produce a currency inflation crisis, or will witness natural improvement in prices and production. I see no way of determining at this moment which course of events will prevail at that remote distance.

For the first time, it is possible to take the position that we have seen substantially the bottom of the depression. The timing of a 20 per cent lift from that bottom remains impossible to calculate with any conviction.

THE OUTLOOK FOR 1933

By Malcolm C. Rorty

The more one knows of the conditions with which the United States and the world as a whole are confronted in these closing days of the year 1932, the less willing he must be to make definite forecasts for the year to come. The one clear certainty is that the public interests can no longer be served by a manufactured optimism. The path of safety lies only through a courageous and unshrinking facing of the real facts of the situation.

There is every evidence that we here, in the United States, are caught in a definite economic deadlock. Levels of consumption have fallen so low as to create great apparent surpluses of industrial equipment. Family incomes have declined to such extent as to create effective, even if fundamentally unreal, surpluses of housing. Those opportunities for new enterprise which persist through an ordinary depression and form the basis for upturns in activity, have today, for practical purposes, ceased to exist. No amount of proffered credit appears to tempt sound borrowers to make use of it for new ventures or even for important reconstruction or replacement operations. Ease of credit has served a necessary purpose in checking the violence of liquidation, but it has failed, and probably will continue to fail, to stimulate private enterprise into that renewed activity upon which business revival must ultimately depend.

There is no escape from the fact that we are facing one of the great crises in our history—certainly greater than that of the World War; perhaps greater than that of the Civil War. Yet there is no occasion for confusion of thought. It always has been possible for the bottom to drop out of any depression; it simply *has* dropped out of this one.

Under these circumstances there can be little question as to need for positive governmental action to break the deadlock that exists and to force a revival of business activity. We must, of course, give all necessary relief to the unemployed. We must, in one way or another, give at least a breathing period with respect to the continuing liquidation of rural and urban mortgages. We must lend a hand to world recovery through further adjustments and moratoria on War Debts. We may even indulge ourselves in faint hopes that some lowering of tariff walls and trade barriers may be brought about in consideration of the revisions of these debts. But, primarily, we must prepare to bring our own revival in our own way, with only the necessary minimum of regard for foreign influences.

My own personal conviction is that we shall find no better method of stimulating revival than by offering, at the appropriate moment, definite cash premiums for the initiation of private construction and reconstruction operations and self sustaining State and Municipal Works, on the basis of open competitive bids, making awards of the available sums to those who will start the greatest volume of new work for the smallest premiums. Certainly, any successful plan for forcing revival must aim to supplement governmental expenditures by a much greater volume of private borrowings and investment.

However, the particular plan that is adopted will, in the end, be less important than the need for a disciplined facing of the real facts. There should be no toleration of attempts to seize upon the present emergency to bring about permanent changes in our economic structure. Our economic machine is still whole and needs only a cleaning of spark plugs and a vigorous cranking up to start it on its way. Relief measures should be rigidly restricted to relief purposes, lest in the end we find the cure worse than the disease.

Regardless of the lack of constitutional provisions for a declaration of public emergency, an orderly approach to the problems of the coming year will require the acquiescence of Congress and the people as a whole in the assumption of a close approach to war powers by the new President and his cabinet. If we may forecast a popular acceptance of this necessity and a leadership to correspond, we may reasonably hope that the coming year will mark the end of the present crisis. But if the twelve months pass in a confusion of counsels and debate, the end of the year may readily find levels of activity lower than the beginning.

MINUTES OF THE ANNUAL BUSINESS MEETING

A business meeting of the American Statistical Association was held on Saturday, December 31, 1932, at the Netherland Plaza Hotel at Cincinnati, Ohio. It was called to order by President Irving Fisher.

The following amendments to the Constitution which were passed for the first time at the Annual Meeting in 1931 were finally adopted:

Article VIII to read:

> The officers of the Association shall be a President, a Secretary-Treasurer, six other Directors, eight Vice-Presidents, the Editor of the JOURNAL and the Editor of the ANNALS. Each of the Vice-Presidents shall represent a distinct field of statistical interest, the field to be represented being designated by the Board of Directors. The President, Vice-Presidents, Secretary-Treasurer, and Editors shall be elected each year beginning with the Annual Meeting at which this amendment to the Constitution is adopted, the manner of their election being prescribed in Article IX. The six Directors, other than the President and Secretary-Treasurer, shall be elected at the Annual Meeting at which this amended Constitution is adopted, two for a term of one year, two for two years, and two for three years. Thereafter, two Directors shall be elected each year for a term of three years, the manner of their election being prescribed in Article IX. These Directors shall not be eligible for reëlection until one year has elapsed after leaving office. All elected officers shall take office at the close of the Annual Meeting at which elected. The President, Directors, and Secretary-Treasurer shall form a Board of Directors for the government of the Association, three of whom shall constitute a quorum at any meeting regularly convened. The Vice-Presidents shall constitute advisors to the President and Secretary in the preparation for annual and special meetings, and in matters concerning the interests of the groups they represent in the membership of the Association.
>
> In case of the incapacity of the President to act on any occasion, the Secretary-Treasurer shall designate which of the Vice-Presidents shall act as President.

Article IX to read:

> The President, Secretary-Treasurer, other Directors, Vice-Presidents, and the two Editors shall be elected in the following manner. The President shall appoint a Nominating Committee of three members, the personnel of which shall be announced in the quarterly publications of the Association at least three months before the Annual Meeting. It shall be the duty of the Nominating Committee to make nominations for officers to be elected at the Annual Meeting, and to notify the regular members and fellows by mail of its nominations at least thirty days before the Annual Meeting. Twelve or more regular members or fellows may make nominations for any office by submitting signed petitions to the Nominating Committee at any time after the appointment of the Committee and up to the time of the Annual Meeting, but this shall not prevent the Committee from making additional nominations for the same office.
>
> If no nominations by petitions are submitted for any office, the nominee of the Nominating Committee may be elected at the Annual Meeting by *viva voce* vote. If there are additional nominations by petitions for one or more offices, it shall be the duty of the Nominating Committee to announce such nominations, the election for such office or offices shall be by ballot, and the President shall appoint three judges of election who shall count the ballots, shall decide any questions that may arise as to validity of any ballot, and shall declare the results of the election. The candidate for President, or for Secretary-Treasurer, or for Editor of the JOURNAL, or for Editor of the ANNALS, receiving a plurality shall be declared elected, while the six candidates for Directors and the eight candidates for Vice-President receiving the highest number of votes shall be declared elected.

A resolution was adopted amending By-Law 3 to read as follows:

> As soon as practicable after each annual business meeting of the Association, the Board of Directors shall appoint a Committee to Stimulate and Coördinate

Research. The chairman of this Committee shall be designated by the Board of Directors. The President of the Association shall be, *ex officio*, a member of this Committee.

The Board of Directors shall also appoint such other committees as, in its judgment, are deemed necessary for carrying on the activities of the Association. These committees shall serve for one year or until their successors are appointed.

William L. Crum, Chairman of the Nominating Committee, reported, on behalf of that committee, the following nominations:

President: Stuart A. Rice

Directors:

Three years,
Robert E. Chaddock
Malcolm C. Rorty

Two years,
Louis I. Dublin
Edgar Sydenstricker

One year,
Donald R. Belcher
Carl Snyder

Vice-Presidents:

Facts and Methods Pertaining to Marketing,
Melvin T. Copeland

Facts and Methods Bearing on Economics and Economic Theory,
Frederick C. Mills

Facts and Methods Pertaining to Political Science, Sociology, Social Welfare, Labor Problems, and Vital Statistics,
Horatio M. Pollock

Facts and Methods Relating to Anthropology, Biometry, Psychology, and Education,
Lowell J. Reed

Facts and Methods Pertaining Primarily to Business,
Arthur H. Richardson

Facts and Methods Pertaining to Financial Institutions,
George B. Roberts

Statistical and Actuarial Methods and Technique and the Teaching of Statistics,
Henry Schultz

Collection and Classification of Data and Administration of Statistical Agencies
William M. Steuart

Secretary-Treasurer: Willford I. King

Editor of the JOURNAL: Frank A. Ross

Editor of the ANNALS: Harry C. Carver

A motion was carried instructing the Secretary of the Association to cast the unanimous ballot of those present for the nominees as listed. This was done.

Secretary-Treasurer Willford I. King read his report as Secretary and also his report as Treasurer. A motion was carried to accept these reports as read.

The Editor of the JOURNAL, Frank A. Ross, submitted his annual report. This report was accepted as read.

The following reports of committees were offered by the members specified:

Joint Committee for the Improvement of Statistics published by the Income Tax Division of the United States Treasury Department,
read by William L. Crum, *Chairman*

Committee on Governmental Labor Statistics,
read by Meredith B. Givens

Committee on Census Enumeration Areas,
read by Howard W. Green, *Chairman*

Committee on Institutional Statistics,
read by Horatio M. Pollock, *Chairman*

Committee on Price Statistics,
read by Morris A. Copeland, *Chairman*

Committee on Research,
read by Meredith B. Givens, *Chairman*

Committee on Policy and Finance,
read by Malcolm C. Rorty, *Chairman*

Advisory Committee on the Census,
read by Willford I. King

Each one of these reports was accepted by vote of the Association.

Since members of the following committees were not present, their reports were read by the Secretary of the Association. Each of these reports was accepted by a formal vote.

Committee on Real Estate Statistics,
signed by John R. Riggleman, *Chairman*

Joint Committee on the Encyclopaedia of the Social Sciences,
signed by Robert H. Coats and Robert M. Woodbury

Representative on the Joint Committee for the Development of Statistical Applications in Engineering and Manufacturing,
signed by Walter A. Shewhart

Representative on the National Conference on Nomenclature of Disease,
signed by George H. Van Buren

Representatives on the Committee to Advise the New York State Department of Social Welfare,
signed by Ralph G. Hurlin

Members of the Social Science Research Council,
signed by Edgar Sydenstricker, *Chairman*

Representative on the Business Research Council,
signed by Donald R. Belcher

Stuart Rice offered the following resolution:

WHEREAS, unusual population movements have occurred since the Census of 1930 between city and country and within cities, it is RESOLVED by The American

Statistical Association assembled in its annual meeting at Cincinnati, Ohio, December 28–31, 1932, that in its opinion a population census of the United States should be taken, intermediate between the decennial enumerations of 1930 and 1940. It is the further opinion of this Association that this population census should be synchronized with the next quinquennial Census of Agriculture. It is further RESOLVED that this resolution should be brought by the Association to the attention of the President of the United States, the Secretary of Commerce, the Director of the Census, and members of the Congress of the United States; and that the officers of the Association be instructed, in coöperation with other interested organizations, to take all steps available to them to promote the objects herein set forth.

It was adopted by a vote of the Association.

He also proposed a resolution as follows:

WHEREAS, the social scientists are directly interested in the scientific work of the several departments of government, THEREFORE BE IT RESOLVED, that this Association authorize the appointment of two representatives on an interassociation committee of the social sciences to explore this whole subject with a view to making social scientists more effective in this area, and that the American Economic Association, the American Political Science Association, and the American Sociological Society be invited to appoint representatives to such a committee, and that the committee thus formed shall be authorized to take action in any specific cases which may call for immediate attention.

This resolution was also adopted as read.

A motion was made, seconded and carried to adopt the following resolution:

We express our sympathy with those who are trying to save *Social Science Abstracts* and hope for its continuation on a modified basis.

The following resolutions, as offered by Sidney W. Wilcox, were unanimously adopted:

The members of the American Statistical Association assembled in Annual Meeting desire to extend their thanks to the management of the Netherland Plaza Hotel for the courteous treatment extended to all those present and for the ample accommodations provided for the meetings of the American Statistical Association and for the use of its officers.

The Secretary of the Association is hereby instructed to convey to Professor Francis H. Bird the hearty thanks of the Association for his excellent work in preparing the manuscript for the Joint Program of the Annual Meeting and in making all of the necessary arrangements for the meeting.

The members of the American Statistical Association feel that they are much indebted to President Irving Fisher for his successful endeavors in preparing the very interesting and instructive program now being carried out. They, therefore, take this occasion of presenting to President Fisher their hearty thanks for his services to the Association throughout the year 1932.

The meeting adjourned.

WILLFORD I. KING, *Secretary*

REPORTS

Report of the Secretary

Membership December 1, 1931		2,265	
Additions during 1932	157		
Deductions during 1932:			
Deaths	7		
Resignations	189		
Dropped because unable to locate	2		
Dropped or suspended for non-payment of dues	249		
	447		
Net loss in membership during 1932		290	
Membership December 1, 1932 (including 26 members unable to pay dues but carried on rolls at their request)			1,975
Besides members, we have:			
JOURNAL subscribers, mostly libraries		524	
JOURNAL, domestic exchanges		23	
JOURNAL, foreign exchanges		25	
			572
Subscribers to the ANNALS OF MATHEMATICAL STATISTICS (includes both libraries and regular and honorary members)		245	
ANNALS, domestic exchanges		2	
ANNALS, foreign exchanges		5	
			252
Total members, subscribers, and exchanges			2,799

The following deaths were reported during the year:

Mr. Magnus W. Alexander
Mr. Stanley Clark
Major P. G. Craigie, C. B.
Mr. Richard Fitch
Dr. Eugene L. Fisk
Dr. Charles J. Hastings
Mr. William G. Reed

Four numbers of the JOURNAL containing 462 pages, together with the PROCEEDINGS Supplement, containing 275 pages, have been issued in 1932. These compose Volume XXVII.

There were 7½ pages of paid advertising in the four issues of the JOURNAL.

Volume III of the ANNALS OF MATHEMATICAL STATISTICS was published in 1932 and comprised four numbers containing 367 pages.

Previous to the present Annual Meeting in Cincinnati, Ohio, the Association has, during the year, held 8 dinner meetings in New York City, the average attendance at these meetings being 125.

We have reports of meetings held by district organizations as follows:

Chapter	*Number of Meetings*	*Average Attendance*
Albany	4	30
Austin	0	
Boston	1	51
Chicago	6	63
Cleveland	1	154
	8 (Business Group)	19
Columbus	8	35
Los Angeles	4	25
Pittsburgh	12	35
San Francisco	4	32
Districts		
Detroit	(No report)	
New Haven	0	
New York, luncheon meetings	6	66
Washington	2	85

WILLFORD I. KING, *Secretary*

Report of the Treasurer, Covering the Period December 1, 1931, to November 30, 1932

Gross Receipts and Disbursements

Cash on hand December 1, 1931	$2,021.51	
Gross cash receipts during year	18,776.56	
		$20,798.07
Gross cash disbursements during year		19,745.08
Cash on hand November 30, 1932		$1,052.99
Gross cash disbursements during year	$19,745.08	
Refunds	87.36	
Gross Expenses		$19,657.72

Functional Apportionment of Gross Expenses
(Including Overhead)

Annual meeting and New York meetings	$3,564.38	
JOURNAL and PROCEEDINGS	10,325.49	
ANNALS	2,302.13	
Employment Clearing House	288.18	
Securing new members	415.22	
Miscellaneous	2,762.32	
		$19,657.72

Net Receipts and Disbursements

Cash on hand December 1, 1931		$2,021.51
Gross cash receipts	$18,776.56	
Refunds	603.42	
Net cash receipts during year		18,173.14
Total		$20,194.65
Gross cash disbursements during year	$19,745.08	
Refunds	603.42	
Net cash payments during year		$19,141.66
Cash on hand November 30, 1932		$1,052.99

Itemized Statement of Net Receipts and Disbursements

Cash on hand December 1, 1931		$2,021.51

Net Cash Receipts

Individual membership dues	$9,374.60	
Contributing membership	25.00	
Corporate dues	500.00	
Subscriptions to JOURNAL	3,020.54	
Subscriptions to ANNALS	1,440.20	
JOURNAL sales	654.42	
Advertising	275.00	
Receipts from authors for reprints	316.93	
New York meetings	1,732.90	
Interest on bonds and deposits	545.10	
Dividends	148.75	
Sale of miscellaneous books to members	139.70	
Total net receipts		$18,173.14
Total		$20,194.65

Net Cash Disbursements

Cost of JOURNAL:		
December, 1931, edition, including reprints	$1,358.86	
March, 1932, edition, including reprints	1,020.88	
PROCEEDINGS, including reprints	1,891.76	
June, 1932, edition, including reprints	1,065.94	
September, 1932, edition, including reprints	959.54	
		$6,296.98

Cost of ANNALS	$2,000.00	
Printing, postage, and stationery	921.42	
Salaries	6,989.98	
Rent	333.00	
New York Meetings	1,463.36	
Telephone and telegraph	88.94	
Annual Meeting	601.92	
Miscellaneous expenses, Editor's office	120.00	
JOURNALS bought back	122.10	
Cost of shipping JOURNALS	26.90	
Miscellaneous books sold to members	90.79	
Miscellaneous expenses, Secretary's office	57.25	
Contributions to cost of luncheon meetings in New York City	29.02	
Total net disbursements		$19,141.66
Cash in checking account, Chemical Bank & Trust Company, November 30, 1932	$324.93	
Cash in Emigrant Industrial Savings Bank	720.59	
Cash on hand, not deposited	5.47	
Foreign checks deposited for collection	2.00	
		1,052.99
Total		$20,194.65

On November 30, 1932, the Association possessed, in addition to stationery and miscellaneous supplies, the following assets:

Cash on hand	$1,052.99
Furniture carried at	314.59
JOURNAL and PROCEEDINGS, 10,206 copies	
Memorial Volume, 5 copies	
Bonds in Life Membership Fund, market value November 30, 1932, plus accrued interest	1,335.00
Other Bonds	4,881.25
Common (guaranteed) and preferred stocks—market value, November 30, 1932	1,695.63

All bills presented to the treasurer have been paid. There is a contingent liability of $600 in respect of the August and November, 1932, issues of the ANNALS OF MATHEMATICAL STATISTICS, of which the November issue had not been published on November 30, 1932.

WILLFORD I. KING, *Treasurer*

Report of the Auditing Committee

We have examined the books and records in the office of the Treasurer of the American Statistical Association and have verified the bank balances.

We hereby certify that the Treasurer's report submitted is in accordance with the books and records, and, in our opinion, correctly represents the financial condition of the American Statistical Association as of November 30, 1932, and receipts and disbursements during the year December 1, 1931, to November 30, 1932.

SEYMOUR L. ANDREW
JAMES W. ANGELL
Auditing Committee

New York, N. Y.
December, 1932

Report of the Editor of the Journal

The Editor of the JOURNAL wishes first to express his appreciation for the kindness of Professor Harry C. Carver, Editor of the ANNALS OF MATHEMATICAL STATISTICS, in carrying through to completion the onerous task of editing the PROCEEDINGS volume of the Annual Meetings of last year. This volume always presents a multitude of problems and is a burden which the bravest might well shun. Appreciation is also due to Dr. Leo Wolman, Review Editor, for his usual splendid addition to the value of our publication. Finally, the Editor wishes he might convey his personal thanks to each and every one of those who have contributed either through the preparation of manuscripts, through assisting the Editor in the ultimate selection of manuscripts, or through the preparation of reviews. It is difficult anywhere to find more splendid coöperation.

In spite of the present depression, the Association generously inserted in the budget for 1932 the usual amounts for publication of JOURNAL and PROCEEDINGS. The Editor is glad to announce that through more advantageous financial arrangements with our publishers and strict economies he has been able to aid the treasury, faced with a decline in membership, by returning to it over $500 of the appropriation. However, the number of pages printed during the year was 462 as compared with 500 pages in 1931. The PROCEEDINGS supplement contained 275 pages as compared with 287 the previous year.

FRANK A. ROSS, *Editor of the* JOURNAL

Report of the Committee on Research

As a body whose primary function was understood to be the coördination and further planning of the research activities of the Association your Committee has undertaken a general reconnaissance of the organized work of this and other organizations in the planning and promotion of statistical research. It has been discovered that forty or fifty committees on statistics are now in existence, sponsored by more than thirty organizations. It is our opinion that the committee layout of the Association should be carefully reconsidered with reference to the sharper definition of the functions of individual committees and their inter-

relationships, and with reference to the related work of other organizations. In the interest of the effective cultivation of the research interests of the Association we submit the following recommendations:

(1) That the membership of the Committee on Research shall be strengthened by provision for effective representation from the field of statistical theory and method.
(2) That the committees of the Association concerned with research and research data should be encouraged to develop publications in line with the special interests of these committees.
(3) That all special publications of the Association except the PROCEEDINGS, the JOURNAL, the ANNALS and Supplements thereto, should arise from the work of the committees of the Association.
(4) That whenever a question of publication shall arise in connection with the work of one or more of its committees, the Association through its Executive Secretary in consultation with the Committee on Research shall seek to arrange publication through the coöperation of some agency such as the Social Science Research Council, provided satisfactory arrangements for final editing and distribution can be made through such agency; and further, that the general publication policy should be considered when the first special publication is ready and that a unified series should be considered except when commercial publication is preferable and can be satisfactorily arranged.
(5) That the Association and the Social Science Research Council should seek to establish joint committees on data in fields in which such procedure is mutually desirable, and that the inter-relation between the work of the two bodies should be carefully considered whenever committees are appointed in fields in which collaboration is not feasible.
(6) That all Association committees concerned with research and research data shall be requested to keep the Committee on Research regularly informed regarding the progress of committee work and particularly with reference to contacts or negotiations with outside bodies, and that new committees at the time of appointment shall be so instructed.
(7) That in line with the general plans of the Committee on Research, which will be discussed with the Board of Directors, the following committees shall be immediately reappointed for the year 1933:
    Committee on Census Enumeration Areas
    Committee on Income Tax Statistics
    Committee on Real Estate Statistics
(8) That the following new committees shall be appointed:
    Committee on Labor Statistics
      (to replace the Committee on Governmental Labor Statistics)
    Committee on Statistics of Relief and Child Care
    Committee on Statistics of Delinquents and Criminals
    Committee on the Statistics of Institutional Treatment of Mental and Physical Disorders
(9) That the appointment of a Committee on Price Statistics shall be deferred pending the further development of certain current explorations in the related field of Commodity Volume Statistics, with the expectation that committees concerned with prices and commodity volume data may later be required.
(10) That the early appointment of a Committee on Statistical Theory and Technique and the appointment of other committees on research or research data shall be deferred pending further explorations by the Committee on Research which is now giving attention to the opportunities for Association activity over a wide area including the general fields of Commodity Statistics, the Statistics of Wealth and Income, Labor Statistics, Statistics of Special Industries and Industry Groups, Census Materials, Population and Vital Statistics, Educational Statistics and others.
(11) That in view of the imminent reorganization of federal bureaus and in view of the potential good or bad effects of such realignment on the conduct of basic statistical inquiries, the Committee urges that the Board of Directors

of the Association should give immediate attention to the need for conserving the interests of scientific groups in the pending reorganization of departments incident to the economy drive to which the new Administration is pledged.

We recommend the acceptance of this report and its transmission to the Board of Directors for further consideration and action.

Respectfully submitted,

MORRIS A. COPELAND — HORATIO M. POLLOCK
NEVA DEARDORFF — STUART A. RICE
MARY VAN KLEECK — MEREDITH B. GIVENS, *Chairman*

Report of the Committee on Governmental Labor Statistics

The Committee's program in 1932 has been concerned primarily with the completion for publication of its study of Statistical Procedure in Public Employment Offices; coöperation with employment offices in the United States in the promotion of better administrative procedure as a basis for the proposed statistical plan; and an analysis of available data on wage rates, as the first step in a plan for the collection of more adequate information on wages and earnings in this country. Other related activities are described in the following report.

(1) *Statistical Procedure in Public Employment Offices.*—This study, now in press, is being published by the Russell Sage Foundation as a companion volume to its earlier report, *Employment Statistics in the United States.* It is characteristic of both these books that before publication the plan set up in them was the subject of experiment through the coöperation of public officials concerned.

In the plan proposed for the statistical procedure of employment offices, one of the central features is a daily record of information on all transactions, prepared by each local office but compiled and analyzed in a central office for local use and for publication. The three public employment office demonstration centers in the United States—Rochester, Philadelphia and Minneapolis—are testing this proposal and representatives of these three centers have already met with the Executive Secretary of the Committee, during the annual meeting of the International Association of Public Employment Services in Washington; as a result of this conference, difficulties were cleared up and general agreement secured to carry the experiment further. It is possible that both in New York State and in Minnesota this experiment may be extended to all offices in those states.

(2) *Administrative Procedure of Public Employment Offices.*—The proposed statistical procedure led the Committee into some consideration of the administrative work of public employment offices since adoption of the Committee's statistical recommendations would involve changes in employment office routine. At the last annual meeting of the Committee it was decided to attempt, in coöperation with representatives of the Association of Public Employment Services, the drafting of forms and a manual of procedure for local employment offices. Some progress toward this objective was made during the year. There have been several conferences with the public employment office demonstration centers at Rochester, Philadelphia and Minneapolis and each of them now has a manual of

procedure on the statistical phases of employment office work, based on the Committee's study of this subject. Recently a preliminary manual was compiled from the report on the study for the use of the center at Philadelphia. A sample Hollerith card, recommended in the study, for the use of central statistical bureaus in the tabulation of data derived from the daily local employment office reports, has been prepared and copies have been forwarded to the three centers.

Preparation of a set of public employment office administrative forms, a task more difficult perhaps than the Committee contemplated, now seems well under way. Industrial Relations Counselors, Inc., have begun a special study on this subject. The study will be in two parts: (1) a series of monographs on employment office administrative procedure in Great Britain, Germany, France, Switzerland, Sweden, Canada and the United States; (2) a comparative analysis of the different procedures and a suggested plan for the United States. Contracts have been made with authors in the European countries, persons connected with the employment office administration in each case, for completion of the monographs in the summer of 1933. When these monographs are at hand, work on the remainder of the study will begin. It is hoped that the undertaking will yield a procedure for administration comparable with and complementary to the Committee's suggested procedure on employment office statistics.

(3) *Survey of Wages Data.*—To discover the scope and character of the widely scattered statistics of wages and earnings, a survey of wages data was begun in 1931 under the auspices of the Committee. The survey has been substantially completed during the present year. Partial returns have been secured from trade associations which gather statistics of wages or earnings. The results at present are in the form of a comprehensive critical inventory of governmental wage data comprising about 2,000 individual entries. The work has been carried forward and supervised in the offices of the Social Science Research Council. The materials describe the character and scope of the available official data on wage rates and earnings for the United States and Canada, including all current materials and recurring reports, and the principal sources for earlier years. For each industry individual card entries indicate the diversity and technical quality of the data as far as this could be gleaned from the published reports.

The original cards prepared in the course of this survey will probably be duplicated and distributed to the compiling agencies for corrections, additions and criticism. It is expected that they will constitute an exhibit supplementing the report on needed improvements in statistics, now being prepared under the auspices of the research committee of the President's Committee on Social Trends. If circulated in the crude original form, the materials of the survey will be useful to compiling agencies and students of wages. It is planned, however, to prepare a later analytical cross-classification of the findings by industry groups. This cross-classification will reveal the range and diversity of the materials. More important is the value of the proposed analysis in revealing the actual practice of compilers now handling wage statistics. An examination of the unstandardized and non-comparable character of the materials will furnish the starting point for the Committee's consideration of the technical problems of compilation

and presentation in relation to the purposes to be served by the data. A preliminary analysis of the results of the survey is now under way.

(4) *Comparability of Wage Rates of the Same Occupational Classification.*—During the year the Committee made a survey of the wage rates data published by official bureaus and concluded that in many cases entirely different jobs have the same occupational designation and that there is need for lists of occupations fairly standard for the different industries together with definitions so that wage rates may be properly classified by occupations. The Committee explored the possibilities in this direction in the printing trade and the full-fashioned hosiery industry and is now giving its support to an effort to promote a more ambitious research project in this field.

(5) *Correction of Employment Indexes.*—The Committee gave some attention during the year to the problem of correcting employment indexes for statistical bias, with a view to the development of a standard procedure that might be recommended to the statistical bureaus. Memoranda on the subject, submitted by W. A. Berridge and Sidney W. Wilcox, are now being considered and the prospect of agreement on a standard procedure during the coming year is favorable.

(6) *Industrial Commission of Colorado.*—The Chairman spent some time in Colorado early in the year and discussed the Committee's program with members of the Industrial Commission. At their request a memorandum on the recommended practice in employment statistics was submitted to the Commission and copies of the correspondence were forwarded to the United States Bureau of Labor Statistics.

(7) *Notes on Developments in Governmental Labor Statistics in 1932.*—The United States Bureau of Labor Statistics is correcting its employment index for statistical bias by adjustment to the census figures and is adopting the year 1929 as a new base in order to include the non-manufacturing groups with manufacturing. The Committee has found it impossible to consider a multiple year base, since it is only quite recently that an adequate sample in the non-manufacturing groups has become available. The Bureau plans to revise its index at least every two years. It is now collecting statistics of building permits from cities of 10,000 population or over as against the limit of 25,000 population formerly in use. The Bureau's effort to collect man-hours data has been encouraging. About 50 per cent of the reporting manufacturing firms are now including these data and a smaller percentage of the non-manufacturing firms. It has been found that establishments on a piecework basis are not so likely to give this information. In this connection, the successful experiment of the Bureau of Mines in the geological survey should be reported; after a year of experiment with collection of data on manshifts, this information is now to be asked for on the regular schedule.

Progress is being made in the monthly surveys of employment and earnings in Massachusetts. All the fields of employment are now being covered and it is probable that a representation of at least 40 per cent will be secured in each case, the most recent census material being used to determine the per cent coverage. For public utilities it has been possible to secure reports covering approximately

95 per cent of wage-earners employed and for municipal employment, approximately 70 per cent.

It should soon be possible to compute a general series of index numbers for all industrial groups combined, weighting each group in accordance with its representation, but the base year could not be earlier than 1931 because the survey was not extended to some fields of employment until that year. This general index will, of course, not cover a large number of self-employed persons nor persons in domestic service other than those in hotels and restaurants, nor those in establishments of lines of work in which only a very few persons are employed in a group. The six-months form of the United States Bureau of Labor Statistics is being used in the collection of the data and is proving very satisfactory, especially as it reduces the amount of clerical work in preparing schedules for mailing and reduces the work for the reporting organizations.

In New York State, the number of building firms sending employment reports has been increased to 600. Many problems have been encountered in collecting employment data from firms in wholesale and retail trade, but about 2,000 such firms are now reporting. In addition to wholesale and retail trade and building, other non-manufacturing groups will be covered.

In Pennsylvania, the employment and payroll data are steadily being extended into such non-manufacturing employments as banking, brokerage, real estate and insurance.

These notes give a general indication of the course of development in the field, but undoubtedly do not completely cover the subject, as not all members of the Committee have reported the changes in their states during the year.

(8) *Staff.*—Since midsummer Miss Gladys R. Friedman has acted as part-time assistant to the Executive Secretary.

(9) *Membership of the Committee.*—The personnel of the Committee during the year was as follows:

Charles E. Baldwin	Paul H. Douglas	Howard B. Myers
Joseph A. Becker	O. A. Fried	Eugene B. Patton
William A. Berridge	Corrington Gill	Roswell W. Phelps
Louis Bloch	Meredith B. Givens	Casimir A. Sienkiewicz
R. D. Cahn	Ralph G. Hurlin	F. G. Tryon
R. H. Coats	Don D. Lescohier	Ralph J. Watkins
W. J. Couper	Leifur Magnusson	Sidney W. Wilcox
J. Frederic Dewhurst	W. J. Maguire	

Mary van Kleeck, *Chairman*
Bryce M. Stewart, *Executive Secretary*

Report of the Committee on Institutional Statistics

During the current year the membership of the Committee has remained unchanged, and it has continued its individual and coöperative activities along the lines initiated in 1930 and 1931 and reported upon at the annual meeting of the Association last year.

Two regular meetings only of the Committee were held during the current year, largely owing to lack of funds with which to reimburse members for their expenses in attending meetings. It is a serious handicap to this Committee, as also no doubt to other active Committees of the Association, to have no funds available for the purposes of conference.

The past year has, however, in spite of this handicap, witnessed material progress of the Committee's program with respect to its three major coöperative undertakings, namely:

1. Coöperation with the Research Bureau of the New York State Department of Social Welfare in a three year demonstration project to establish the best methods of providing accurate information on the operation of social welfare agencies throughout the state.

2. Coöperation with the Committee on Hospital Statistics of the American Hospital Association in devising new statistical schedules for use in general hospitals. These schedules will, as far as practicable, be put into use in a small group of New York State hospitals as a phase of the demonstration in social welfare statistics mentioned above.

3. Coöperation with the United States Bureau of the Census in the development of new and improved statistical schedules for use in the preparation of current and future reports of the Census Bureau, particularly on penal and correctional institutions, hospitals for mental diseases, and institutions for the mentally defective and epileptics.

With respect to the first coöperative undertaking, Dr. David Schneider, director of the research bureau of the New York State Department of Social Welfare, and a member of your Committee on Institutional Statistics, reports that the demonstration project which was begun on April 1, 1932, is now well under way. The research bureau of the New York State department is in general charge of the demonstration and coöperating with it are the Social Science Research Council, the United States Children's Bureau, the American Statistical Association, and the American Association of Public Welfare Officials. The results of this demonstration are expected to show what use is being made of public funds, the amount and kind of service provided by public and private agencies, and the distribution of the costs of such services between the agency groups. These data will be of great value to the executive and legislature of New York State and to public welfare officers, social workers, research institutions, contributors to philanthropic enterprises, and citizens generally who are interested in the social welfare activities not only of New York but other states.

To supplement the state's resources for the development of the demonstration project, a grant of $7,500 for the fiscal year ending June 30, 1933, was requested and received from the Spelman Fund of New York. This grant, which became available in October, 1932, was made to the president of the New York State Board of Social Welfare, and will be administered as funds of this department. While the grant from the Spelman Fund was made only for the current fiscal year ending June 30, 1933, the original request was for a three-year period, and a request for a renewal of this grant for the coming year will be made. The project is

receiving the full support of the New York State Department of Social Welfare and has the complete endorsement of the governor-elect and other responsible officers.

State-wide monthly reporting is now organized under this project for old age relief, child welfare institutions and agencies, public homes (formerly almshouses), private homes for the aged, and general home relief of the public welfare districts of the state. In these fields reporting is now practically complete. Regular monthly reporting is now being organized for local boards of child welfare in the various counties, and for public relief for the blind. The organization of current reporting for public veterans' relief and relief by private or unofficial family welfare agencies will be undertaken shortly.

The second undertaking of the Committee on Institutional Statistics in coöperation with the Committee on Hospital Statistics of the American Hospital Association has resulted in the preparation of hospital discharge schedules to be used by a small group of general hospitals in two of the larger cities of the state in connection with the demonstration above described. This schedule is designed primarily to show in addition to the usual identifying data regarding hospital patients, the economic status of the patient, the preliminary and final diagnosis of his condition, the general nature of treatment, length of stay of patient and condition on discharge. It is expected that statistical analysis of the information thus obtained will be extremely valuable in the better adaptation of hospital facilities and hospital practice to the economic and treatment needs of patients.

The third undertaking of your Committee, namely, coöperation with the United States Bureau of the Census in developing more complete and accurate information on the official institutional services of the nation, has shown gratifying progress. In the field of the penal and correctional institutions Dr. Thorsten Sellin of the Bureau of Social Hygiene, and special advisor to the Census Bureau in this field, though not at present a member of the Committee on Institutional Statistics, has kept in close touch with the committee and has been in attendance, as a guest, at the Committee's meetings during the year. Through his coöperation, and that of the general advisory committee to the Census Bureau on Criminal Statistics, many of the recommendations of the Committee on Institutional Statistics have been put into practice in connection with the compilation of data for the report on prison statistics for 1929 and 1930, published in November of this year, and in connection also with plans for the decennial census of 1933. Existing schedules have been greatly improved and some new schedules have been drafted. National statistics on the death penalty have been gathered and published for the first time in the current report and will be a permanent feature of the annual census. The decennial census will cover penal institutions of all kinds. A special parole schedule is also being prepared as well as a schedule on executive clemency. Dr. Sellin reports that there is at least a possibility that judicial criminal statistics for a registration area will be gathered.

In the field of statistics of mental hospitals and institutions for the mentally defective and epileptic, Frederick W. Brown, director of research and statistics of the National Committee for Mental Hygiene, and a member of the Committee on

Institutional Statistics, acting as special advisor to the Bureau of the Census, has been able to contribute much to the betterment of these statistics for current publication and for the decennial census of 1933. For the decennial census, effort will be made to obtain statistics which will be comparable to the 1922–23 decennial census, and schedules for this purpose have already been prepared and will be sent to all state and federal institutions including the neuropsychiatric hospitals of the United States Veterans' Administration and to county, city and private mental hospitals. Special schedules will be sent to all general hospitals having particular facilities for the care of mental patients. Detailed information relating to the criminal insane and to mentally-defective and epileptic delinquents will be procured from all state hospitals and other institutions caring for such patients, and in addition a special effort will be made to collect information about patients of these groups in penal and correctional institutions known to be caring for them.

Your Committee recognizes that there are many gaps in present statistical information regarding our dependent and delinquent classes, but through the excellent coöperation which it is receiving from the many special national and state agencies concerned with these classes, including the United States Bureau of the Census, there is every reason for believing that most of these gaps will shortly be filled. The Committee wishes particularly to stress the importance of the efforts of the United States Bureau of the Census in compiling more complete and accurate institutional statistics and to urge that this Association give the fullest possible support to the Census Bureau's work.

Respectfully submitted,

Frank Bane	C. Luther Fry
Frederick W. Brown	Bennett Mead
Kate H. Claghorn	David M. Schneider
Neil A. Dayton	Carl E. McCombs, *Secretary*
Neva R. Deardorff	Horatio M. Pollock, *Chairman*
Emil Frankel	

Report of the Committee on Price Statistics

Although the Committee on Price Statistics has been in existence for three years, this is its first annual report. During its first year a general survey of the most needed improvements in our wholesale price data and in the methods of their primary compilation and organization was made, and a program of research designed to facilitate such improvements was drawn up.[1] During the Committee's second year a conference was held under the joint auspices of the Division on Industry and Trade of the Social Science Research Council and the Committee on Price Statistics. This conference drew up a set of recommendations concerning the preparation of commodity price index numbers, the collection and publication of original commodity price series and the need for a permanent organization for research in the field of commodity price statistics.[2]

[1] Proceedings, March 1931, pp. 110–126, 284–5.

[2] The Journal, May 1932, pp. 74–8.

During the past year there has been close coöperation between the Social Science Research Council and the Committee on Price Statistics. It has been felt that the research program of the Price Committee should not be pushed until after a general survey has been made of the most needed improvements in certain physical and dollar volume data on commodities. A conference for this purpose is being planned and preliminary work on the conference is now under way under the auspices of the Council.

One of the outgrowths of the conference on price statistics has been the undertaking of the drafting of a set of standards of practice for the compilation, organization and publication of price statistics. Considerable progress on a preliminary draft of standards has been made during the year.

The present membership of the Committee is

ROBERT W. BURGESS — WOODLIEF THOMAS
IRVING FISHER — HOLBROOK WORKING
WARREN M. PERSONS — MORRIS A. COPELAND, *Chairman*
O. C. STINE

Report of the Joint Committee on Statistics of Income

Early in the year the duly authorized appointing power in each of the three groups designated a delegation to the Joint Committee, as follows: for the Accounting group, Professor James L. Dohr (Columbia), Professor Howard C. Greer (Chicago), and Professor William A. Paton (Michigan); for the Economic group, Professor J. Franklin Ebersole (Harvard), Professor Ralph C. Epstein (Buffalo), and Professor Robert Murray Haig (Columbia); and for the Statistical group, Professor William L. Crum (Harvard), Professor Willford I. King (New York University), and Dr. Simon S. Kuznets (National Bureau of Economic Research).

The Joint Committee met in New York on June 1, 1932, elected Dr. King its chairman, adopted certain general principles to guide its study of the problem assigned to it, discussed at some length certain of the more significant specific criticisms and suggestions relating to the Federal income-tax statistics, and established a sub-committee empowered to consider the mass of suggestions submitted. This sub-committee (Ebersole, Epstein, Kuznets, and the Chairman) met immediately in New York, and prepared a preliminary summary and report as a basis for further consideration, by correspondence and otherwise.

During the summer, consideration of this preliminary summary, and of various specific suggestions which were submitted by or on behalf of the various members of the Joint Committee, proceeded by mail. The members of the sub-committee (to which, by consent, Crum had been added) examined in detail the various proposals, and exchanged communications concerning the major points of interest. The preliminary summary, with subsequent notations and addenda, was thus made ready for consideration at the November meeting of the Joint Committee.

The Joint Committee held a second meeting in New York on November 18, adopted the preliminary summary as the basis of discussion, amended it extensively and in detail, and adopted the Recommendations presented below—draft

of which was ordered made by Crum, from elaborate minutes submitted to him by the Chairman.

The Joint Committee recommends to each of the three Associations represented, that:

1. The Association approve in principle the specific recommendations listed under Section D below, and elaborated in the subsequent Sections;
2. The Association authorize the appointment of a delegation to a new Joint Committee, having power to:
   a. Fill in technical details of present recommendations;
   b. Establish and maintain contact—presumably through an agent—with Federal officers, with a view to securing their coöperation in obtaining adoption of the proposed changes;
   c. Continue the investigations of the present Joint Committee, in order to work out further recommendations as needed;
3. The Association authorize the Joint Committee to select such an agent as implied under 2b above, and provide a moderate appropriation for compensation and travelling expenses of such an agent, *or* empower the Joint Committee to seek such an appropriation on the Association's behalf from other sources.

Before proceeding to list and discuss the specific recommendations, it seems desirable to take up certain general points which pertain to the recommendations as a whole or to many of them.

Early in our work, it appeared desirable to adopt certain general aims to guide us in our investigation. This was expected to facilitate our work, and also to insure the organization of our program of changes along lines which could be defended in the event of their submission to government officials for action. These general aims can be summarized briefly as follows.

The Bureau of Internal Revenue now collects and publishes certain data on the annual flow of incomes, corporation incomes and expenditures and balance-sheet items. The existing information can be used to build an annual picture of the flow of purchasing power to individuals (above a certain income range) and of changes in the business activity and financial structure of most American corporations. But the existing tabulations omit many possible classifications and combinations of the data, which would be as important as—or perhaps more important than—the present tabulations, as a means of throwing light upon fundamental economic processes. We are fully aware that the primary purpose of the income-tax return is to facilitate administration of the tax, and we are not in favor of overloading the tax blank with questions which are important only to economists and statisticians. But we do believe it is important to secure information, the proper study of which will enable legislative bodies and all interested citizens to understand and appraise the income tax from the point of view of its impact upon the total flow of income in the nation. The wisdom of future tax policy will depend considerably upon the degree of our knowledge of the basic facts which presumably will be brought to light by some of the changes we shall propose below. Even those of our proposed changes which do not admit of direct support as bearing upon the taxation problem, are indirectly involved in taxation and other governmental problems—the sweep of governmental interest in economic and business matters is now so wide that the information likely to be revealed by every item of our proposed changes will be of large usefulness in guiding legislative policies.

Although the above principle would justify us in recommending changes in the form of the tax return, as well as in the tabulation of data from existing returns, we are, in fact, recommending very few changes in the tax blank (and each is specifically noted below). This is partly because the bulk of the information which now seems to us desirable to add to that already published can readily be compiled and published from the returns as they are now filed. It is due also to our desire to avoid at this time recommendations which would entail extensive administrative acts and adjustments. We are therefore postponing all except the most pressing of the changes which involve alterations in the tax blank.

It seemed wise to work out our specific recommendations in great detail; and, although it has been necessary to present many of them to the Associations only in such form as makes evident the principle involved, we assume that great care will be exercised to complete the detail and render each recommendation tangible and definite before its final submission to Washington authorities. In order to pave the way for this part of the work, we have developed our recommendations with reference to the tax blank now in use, and with reference to *Statistics of Income* as now published (our references to this publication are to the 1929 edition, unless otherwise stated).

We have had constantly in mind the necessity of setting up our recommendations with due regard for the dictates of governmental economy. Fortunately, we are able to make many recommendations looking to the elimination of work now being done; and it is quite likely that the final set of detailed recommendations to which this Report may lead will secure a net reduction in the size of *Statistics of Income* and in the work and cost of preparing it, except in certain years when supplementary surveys are made.

In reference to this last point, we note that certain of the present and proposed tabulations are of such a sort that there is no need of having them every year; although it would be desirable to have even certain of these every year, if all could be had which we desire. We are accordingly recommending that many tabulations be made only at intervals of three to five years, and we believe this practice would bring a large saving in labor and cost, without greatly impairing the significance and usefulness of the data.

A technical device which would save an important amount of space in the publications and cost in their preparation is the adoption of larger units for stating the results in many tables: the use of hundreds or thousands where dollars are now used in numerous cases, and the use of millions where thousands are now used, would secure important economies without reducing the usefulness of the data. The aim to have the various tables "check" to the nearest dollar is of such slight importance in tabulations of this kind that the extra cost involved cannot possibly be justified.

With these general aims and considerations in view, we have sought to make a series of recommendations which would result in obtaining a clear picture of changes in individual and corporate incomes in the United States, the distribution of such income by industrial and occupational groups, the changes in the financial position of the corporations of the country, and the impact of the income tax

upon various economic groups which participate in paying it without burdening unduly the taxpayer in making out his return or the Bureau of Internal Revenue in compiling and publishing information based upon the returns. We believe the recommendations we are now proposing involve only slight changes in the tax blank, and might result—except once in three to five years—in an actual reduction in the size and cost of *Statistics of Income*. No close estimate on this last point can be made until our recommendations are worked out in greater detail.

WILLIAM L. CRUM

Report of the Committee on Real Estate and Construction Statistics

The Real Estate and Construction Statistics Committee has coöperated with the United States Department of Commerce, the National Conference on Construction, and other organizations, in the work of improving the statistical data, methods, and application. The Committee has assisted in the preparation of a manual of instructions and suggestions for making occupancy or vacancy surveys, and a directory of construction statistics, and has taken part in making a survey of methods of making population estimates and forecasts of city growth. Through this Committee the American Statistical Association has coöperated with the National Association of Real Estate Boards, Mortgage Bankers' Association of America, National Association of Building Owners and Managers, and the Associated General Contractors of America, in an effort to work out with the Post Office Department, and others, a feasible plan for enumerating occupancy data. A program session at the annual meeting was arranged by the Committee for the purpose of considering and discussing some of the major problems of real estate and construction statistics.

Respectfully submitted,

JOHN R. RIGGLEMAN, *Chairman*

Report of the Committee on Census Enumeration Areas

This Committee, as recommended in the report presented a year ago, held an all day meeting on Wednesday, to which were invited representatives of each census tract city in the United States.

The chairman, and Professor Lundberg represented the Committee, which was augmented by twenty-five persons representing the fourteen active census tract cities, with the exception of Baltimore, Boston and Buffalo, from which detailed written communications had been obtained by the chairman.

The purpose of the meeting was to develop the use of census tract data through the exchange of the ideas and experiences of those persons promoting the use of census tracts in census tract cities.

The purpose was recommended by the Committee last year with the belief that the maintenance of the census tract cities and the extension of the census tract idea to additional cities depended upon the use those cities make of the data.

During the morning two presentations were made and thoroughly discussed: A detailed description of the analysis of the population and family characteristics of census tracts in Cleveland and the development of the use of census tract data in that city was made by the chairman of the Committee.

The additional population and family data available by statistical areas were discussed by Doctor Truesdell of the Bureau of Census.

At luncheon a motion was made, seconded and carried that the chairman appoint a sub-committee to give consideration to the possibility of obtaining from the next census a proper tabulation of occupations, to take the place of type of industry as presented on Table VIII, the sub-committee to report at the meeting of the Committee next year.

After lunch, detailed descriptions were given of the uses to which the census tract data are being put in the following cities: Indianapolis (Professor Clyde White), Boston (Miss Tracy), Columbus (Mr. Lucas and Professors Brunsman and Blackburn), Cincinnati (Drs. Quinn and Allen and Mr. Davis), Philadelphia (Mr. Clague and Dr. Bossard), Chicago (Mr. Newcomb and Dr. Burgess), St. Louis (Mr. Wenzlick), Nashville (Dr. Kreuger), New York City (Miss Deardorff), Pittsburgh (Mr. Stephan), Washington (Dr. Truesdell) and New Haven (Miss Parten). Reports were also read for Buffalo and Baltimore. The contributions from each city were fully discussed.

It was acknowledged that all of the many items recommended to be undertaken in last year's report are actually being done in some one or more of the different census tract cities.

It was requested that the chairman send a complete report of the day's transaction to each city with a tabulation of the status of the census tract work in each city and the applications being made in all fields.

At the dinner session it was recommended that a morning and luncheon, or luncheon and afternoon meeting be held preceding the American Statistical Association meeting next year; that consideration be given to the technique of handling census tract data by demonstrating from actual projects; that consideration be given the magnitude of the population base required for each type of data.

The Committee feels that population and family changes are taking place so rapidly throughout the United States that plans should shortly be made for a re-enumeration of the population, families and agriculture of the United States in 1935; it favors a date fixed in the late fall of 1934 for this enumeration.

The Committee feels that in working up schedules for the next census more attention should be paid to family data and that data on vacancy in family units, and rooms per family should be given careful and sympathetic consideration.

The Committee gave consideration to the simplification of the census tract tabulations to be obtained from the next federal census, recommending that a study be made by those working with census tract data to determine the advisability of simplifying the data to be published by census tracts with the substitution of greater detail for each statistical area.

Respectfully submitted,

HOWARD WHIPPLE GREEN, *Chairman*
ROBERT E. CHADDOCK
GEORGE A. LUNDBERG
R. D. MCKENZIE
HARRY A. WEMBRIDGE

Report of the Advisory Committee on the Census

The Advisory Committee on the Census held one meeting in 1932. At this meeting the following resolutions were adopted:

Resolution 208

RESOLVED, That it is the sense of the Advisory Committee that the material giving a complete description of the Census of 1930, methods followed, scope, etc., shall not be printed as a publication of the Census Bureau but that copies shall be kept on file for the guidance of the Director at future enumerations.

Resolution 209

RESOLVED, That it is the sense of the Advisory Committee that the decennial census of wealth, public debt, and taxation should be proceeded with by the Census Bureau.

Resolution 210

RESOLVED, That it is the sense of the Advisory Committee that the Director of the Census should proceed with the regular decennial census of institutions covering the same classes as were included in the last decennial enumeration.

Resolution 211

RESOLVED, That Dr. Paul E. Cherington serve as a committee of one to review the manuscript of one or two of these special bulletins on distribution, and make such recommendations regarding changes or additions as seem to him desirable.

Resolution 212

RESOLVED, That the Committee approves the arrangements whereby the volumes under each main subject covered by the census are published as a separate series or set of volumes independently numbered so that there is one set of volumes on population, another on agriculture, etc., instead of numbering all the volumes consecutively as in previous censuses; that it also approves using the octavo size for those volumes for which the tabular matter can be conveniently presented in that format, even though most of the volumes will be of quarto size.

Resolution 213

RESOLVED, That it is the sense of the Advisory Committee that it approves the proposed plans for the distribution of the final volumes as outlined by Dr. Hill.

Resolution 214

RESOLVED, That it is the sense of the Advisory Committee that if possible the maps used for geographical divisions at the last census should be preserved and suitable filing cases secured for their safe storage.

Resolution 215

RESOLVED, That it is the sense of the Advisory Committee that it strongly supports the Director in having family cards preserved and stored for the time being.

Resolution 216

RESOLVED, That it is the sense of the Advisory Committee that there should be an Abstract compiled and printed for the Fifteenth Census as such.

Resolution 217

RESOLVED, That it is the sense of the Advisory Committee that the motion in regard to the index be tabled and that Professor Chaddock and Professor King be appointed as a subcommittee on the census index and instructed to report to the committee at a later date.

WILLFORD I. KING

Report of the Committee on Policy and Finance

At a meeting of the Board of Directors of the Association held last April, the Chairman took occasion to discuss the functions of the Committee on Policy and Finance. He reported a discussion with Dr. Givens, Chairman of the Research Committee, which indicated the probability of that Committee proceeding

rather slowly and cautiously with respect to specific research projects. The indications were, in fact, that the Research Committee might, for some time, confine its activities to arranging for the publication, in monograph form, of desirable texts that were too long for inclusion in the JOURNAL, and too short for issuance in book form.

In further discussion with the Board, the Chairman indicated his feeling that the Committee on Policy and Finance would have no occasion for meetings and no special functions to perform, pending receipt of specific recommendations from the Research Committee. In making the preceding statement, he excepted the need for further support for the ANNALS OF MATHEMATICAL STATISTICS, in which question he undertook to interest himself personally.

Members of Committee:

LEONARD P. AYRES — IRVING FISHER
ROBERT E. CHADDOCK — CARL SNYDER
LOUIS I. DUBLIN — M. C. RORTY, *Chairman*

Report of the Committee on Fellows

The Committee on Fellows elected the following:

Alvin H. Hansen

as a Fellow in the American Statistical Association.

Report of the Committee on the Encyclopaedia of the Social Sciences

As a report of the Joint Committee on the Encyclopaedia of the Social Sciences, Professor E. R. A. Seligman has prepared the following statement.

> During the year 1932 Volumes VII and VIII of the Encyclopaedia have appeared, and Volume IX will have appeared before this report is presented.
>
> Volume X is almost entirely in the printer's hands and Volumes XI and XII are in a forward state of preparation. We expect Volumes XIII, XIV and XV to appear without fail in 1934.
>
> The enterprise has cost far more than was anticipated at the outset, and negotiations are now in progress with the Rockefeller and Carnegie Foundations, the successful outcome of which is confidently expected, and which will render possible, although with severe sacrifice on our part, the completion of the enterprise.

Respectfully submitted,

R. H. COATS
ROBERT M. WOODBURY

Report of Representatives on the Social Science Research Council

See *Annual Report of the Social Science Research Council*, 1932. Copies can be secured at the office of the Council, 230 Park Avenue, New York City.

Report of the Representative on the Board of the Business Research Council

Early in 1932, the Council completed and published the results of its first census of economic and business research in American colleges and universities in a report consisting of three sections, the first dealing with research projects, the

second with recurring series of data compiled, and the third listing the institutions, schools and departments included, together with information concerning organized research bureaus. Your representative was chairman of the Committee responsible for this census and served as editor of the report itself. It has had very large distribution among educational institutions and business concerns.

In view of present conditions, the Council has decided not to conduct another census this year and to postpone all other activities for the time being. At its annual meeting held in December, the Business Research Council elected your representative as Secretary and Treasurer.

DONALD R. BELCHER

Report of Representatives on Advisory Committee to the Research Bureau, New York State Department of Social Welfare

This Committee, on which Dr. H. M. Pollock and the undersigned serve as representatives of the American Statistical Association, was appointed by the Committee on Social Statistics of the Social Science Research Council to coöperate with the New York State Department in carrying out a program for the improvement of the welfare statistics of New York State. A three-year program has been outlined, which is aimed to comprise a thoroughgoing experiment in the collection and utilization of social welfare statistics, the first step of which will be to provide simple but reliable statistics of the services and costs of the various types of welfare agencies and institutions, on a state-wide basis at regular intervals. The State Department is giving enthusiastic support to the project and Governor-elect Lehman has given it his official endorsement. A grant of $7,500 has been obtained from a Foundation to supplement the amount available for the project from the Department's funds during the current fiscal year. This is being used solely for the employment of additional statistical personnel in the Research Bureau of the department.

The project was initiated in April of this year. Complete or nearly complete state-wide monthly reporting is now organized for seven distinct groups of agencies and good progress is being made with other groups. The fields for which state-wide figures are now being issued are: public old age relief, public mothers' aid, other public outdoor relief, city and county homes (almshouses), private homes for the aged, public and private children's institutions, public and private child-placing agencies. As the collection of data proceeds, attention is being given to their improvement. Field work is being provided, in so far as funds permit, for establishing direct contact with reporting agencies.

While this is the project of a single state department and attention is being focused directly on the situation in that state, it is believed that the demonstration which may be here provided will direct the attention of other states to the generally incoherent condition of welfare statistics and stimulate activity in other states for their improvement. It is hoped that standards may be set in this project which will be of assistance in other states.

Respectfully submitted,

RALPH G. HURLIN, *Chairman*

Report of the Representative on the National Conference on Nomenclature of Disease

At Washington last year your representative presented a progress report on the work of the National Conference on Nomenclature of Disease, up to the end of 1931.

Early in 1932 a "preliminary printing" of *A Standard Classified Nomenclature of Disease* was published by the Commonwealth Fund, New York, and distributed for trial use to a considerable number of large hospitals and to interested persons. It was desired that, before a permanent volume should be published the Conference might have the benefit of criticisms based on actual use of the preliminary printing of the Nomenclature. As anticipated, the criticisms and suggestions received were, for the most part, of a constructive nature; and wherever it has been found practicable they have been taken into account in the revision of the Nomenclature. The editing of the final edition has been completed and it will be offered for sale by the Commonwealth Fund, 41 East 57 Street, New York City, delivery to be made January 1, 1933. The price has been set at $3.50, which covers only printing and distribution costs without regard to the expense of preparation.

The work was financed, originally, by a grant of the Commonwealth Fund. This grant has since been supplemented by contributions from the Metropolitan Life Insurance Company, the Prudential Insurance Company of America, the Connecticut General Life Insurance Company, and a number of the national organizations which have been represented on the Conference.

The more important data with respect to the organization, personnel and work of the Conference together with a short description of the Nomenclature itself were given in the progress report of your representative, as presented at Washington last year.[1]

GEORGE H. VAN BUREN

Report of the Representative on the Joint Committee on the Development of Statistical Applications in Engineering and Manufacturing

The current annual report of your representative on this Committee consists of the attached copy of the official report of the Joint Committee, sponsored by the American Society for Testing Materials and The American Society of Mechanical Engineers as published in *Mechanical Engineering* for November, 1932.[2]

While the writer was abroad last summer similar committees were established in England and Germany as the result of Round Table Conferences held in these two countries to consider the application of statistics in engineering as sponsored by the American Society for Testing Materials and The American Society of Mechanical Engineers in this country. In this connection the American Standards Association also coöperated in establishing contacts in conjunction with the two sponsor bodies just mentioned.

[1] PROCEEDINGS, March, 1932, pp. 260–263.

[2] Not reprinted here. See "Applications of Statistical Method in Engineering and Manufacturing," that issue, that publication.

The committee in England consists of a representative, Mr. B. H. Wilsdon, of the British Government Building Research Laboratories, Dr. E. S. Pearson, two representatives of the General Electric Company, a representative of the British chemical industries, and Dr. E. C. Snow and Mr. L. R. Connor of the Council of the Royal Statistical Society. In fact, the Royal Statistical Society is planning to devote one of its regular meetings this winter to the consideration of a paper by Dr. E. S. Pearson in which he will discuss the applications of statistical theory in the development of economic standards of quality and economic control.

This movement in England has the active backing of well-known statisticians such as "Student," Karl Pearson, L. H. C. Tippett, R. A. Fisher, and John Wishart, to mention only a few. The English Committee is already quite active and recently your Chairman has received a copy of an exceptionally interesting paper by Mr. Wilsdon on the subject, "Contributions to the Discussion of the Scientific Basis for Standard Specifications for Clay Building Materials." Dr. E. S. Pearson has coöperated with Mr. Wilsdon in making use of some of the most recent developments of statistical theory in order to attack the very practical problem here considered.

The work in Germany is under the direct leadership of Dr. Hellmich, as stated in the report, and coöperating with him are such well-known statisticians of the newer school of thought as Becker, Plaut, Runge, and Von Mises.

W. A. SHEWHART

COMMITTEES FOR 1933[1]

RESEARCH COMMITTEES

Committee to Stimulate and Coördinate Research

Meredith B. Givens, *Chairman*
Burton Camp
Morris A. Copeland
Neva R. Deardorff
Horatio M. Pollock
Mary van Kleeck
Robert B. Warren

Associate Members

John R. Riggleman
William L. Crum
Howard W. Green

Committee on Labor Statistics

Mary van Kleeck, *Chairman*
Bryce M. Stewart, *Executive Secretary*
Charles E. Baldwin
Joseph A. Becker
William A. Berridge
Louis Bloch
R. D. Cahn
R. H. Coats
W. J. Couper
J. Frederick Dewhurst
Paul H. Douglas
O. A. Fried
Corrington Gill
Meredith B. Givens
Ralph G. Hurlin
Don D. Lescohier
Leifur Magnusson
William J. Maguire
Howard B. Myers
Eugene B. Patton

[1] For additional committee appointments see Miscellaneous Notes in current issues of the JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION.

Roswell F. Phelps
Casimir A. Sienkiewicz
Fred G. Tryon
Ralph J. Watkins
Sidney Wilcox

Committee on Statistics of Institutions for Mental and Physical Disorders
Horatio M. Pollock, *Chairman*
Frederick W. Brown
Kate H. Claghorn
Neil A. Dayton
Emil Frankel
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